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THE
COAL FIELD DIRECTORY
and
MINING CATALOGUE

of COAL MINING EQUIPMENT



UNIVERSI
FEB 1921

FOR THE YEAR

1915

Indexed by Firms Represented
and by Products

TOGETHER WITH A

DIRECTORY OF MINES BY STATES AND COUNTIES

DEVISED, COMPILED, EDITED AND PUBLISHED
ANNUALLY BY

KEYSTONE CONSOLIDATED PUBLISHING CO., INC.

SIXTH FLOOR HOUSE BUILDING
PITTSBURGH, PA.

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INTRODUCTION

In presenting the second edition of the combined COAL FIELD DIRECTORY AND MINING CATALOGUES to the coal mining fraternity, our prediction of last year that each succeeding issue would be better than the one before it, has been fulfilled.

We were much gratified after sending out our last edition, at being the recipients of thousands of congratulary and commendatory letters from mining men, manufacturers and salesmen of machinery, all over the country. We consider the real test of our efforts is shown by the fact that our second edition shows an increase of forty per cent. over the first edition in the number of concerns presenting their catalog descriptions. This increase was met in the face of business conditions that were decidedly unfavorable; so we have cause to feel that our efforts have been appreciated.

The mission of this book is to give the mining man a condensed but comprehensive description of all classes and types of machinery and equipment used in and about coal mines, together with such engineering information and data as will assist him in the proper selection of the equipment best suited to his particular needs.

These catalogue descriptions compactly assembled in one volume, are run in departments. For instance, everything pertaining to the subject of Hoisting and Haulage, will be found in one section of the book, together with all kinds of Engineering and Specification Data, Tables, Charts, Formulae, etc., followed by the catalog descriptions of the manufacturers of that class of equipment.

Through investigation, we have discovered that the average mining man throws away or mislays seventy-five per cent or more, of the catalog literature, bulletins, pamphlets, etc., that come to his office. It almost invariably happens that the proper catalog cannot be located at the time when it is most needed, which results in a waste of time. Here is where the MINING CATALOGS can be of great assistance as a reference book. In fields where these general catalogs have been introduced they are fast becoming the standard authority of buyers, the guide most frequently resorted to in framing specifications.

It brings into a single volume compactly assembled, that which otherwise would be diffused through hundreds of pamphlets scattered over many shelves. It is to the collection of individual catalogs, what the official railway guide is to a rack of the time tables. It is as easy to consult as a dictionary. As up to date as a telephone book, and as concise as the encyclopaedia.

It is our earnest desire to increase the number of catalog descriptions from year to year, thereby making the book as complete a reference book as possible. The greater number of catalog descriptions it contains, the more valuable it will become as a reference book. In this way, those who refer to it will confer a great favor upon us by giving us the names of manufacturers not included in this volume, whose catalog descriptions should appear. As it is, we have a very representative list of manufacturers, but we all know there is nothing that cannot be improved upon; and you, as a user, can give us the co-operation to make it more valuable to all concerned.

The directory of mines will be found in the back part of this book. It is by far the most complete and comprehensive list of mining operations, executives, officials and equipment ever published. The information contained in this book is right up to the minute, some of it having been obtained as late as July 1st, 1915.

No expense has been spared to make this book indispensable to the buyer and the seller of mining equipment. We sincerely trust that it will meet with your approval. Your criticisms or suggestions will be most welcome at all times.

We wish to acknowledge with thanks the co-operation of the coal companies and their officials in giving us the information contained in the directory section, to the firms who have helped to make this book possible by taking catalog space and to the firms who have furnished us with valuable engineering data contained in the various departments.

This book will be published annually and we can assure all concerned that each succeeding issue will be better than the one preceding it.

Respectfully yours,

KEYSTONE CONSOLIDATED PUBLISHING COMPANY
Joseph J. Vigneau, President,
E. B. Day, Vice President and Gen'l. Mgr.
Ralph C .Becker, Secretary.

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COMPANY, Inc.

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BRANCH OFFICES:
Chicago, Ill.—327 So. La Salle St.
Detroit, Mich.—919 Dime Bank Bldg.
New York—52 Vanderbilt Ave.
Philadelphia, Pa.—Bourse Bldg.
Pittsburgh, Pa.—1213 Loraine St.
San Francisco, Cal.—163 Main St.

AETNA EXPLOSIVE CO., INC.....441
Rector St., New York, N. Y.

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140 Cedar St., New York, N. Y.
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Atlanta, Ga.—Healey Bldg.
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Chicago, Ill.—115 West Monroe St.
Pittsburgh, Pa.—Farmers Bank Bldg.
St. Louis, Mo.—Reeves & Skinner Machinery Co., Chemical Bldg.
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Allentown, Pa.
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Chicago, Ill.—636 McCormick Bldg.
New York—82-92 Beaver St.
Pittsburgh, Pa.—2218 Farmers Bank Bldg.
AGENCIES:
Birmingham, Ala.—C. B. Davis Engineering Co., Brown-Marx Bldg.
Bluefield, W. Va.—Superior Supply Co.
Butte, Mont.—S. P. Wright & Co.
Cleveland, O.—Cleveland Pump & Supply Co.
Denver, Colo.—Hendrie & Bolthoff Mfg. & Supply Co.
El Paso, Tex.—Carroll Helmick, P. O., Box 4114.
Huntington, W. Va.—Huntington Supply & Equipment Co.
Los Angeles, Cal.—Harron, Pickard & McCone.
Milwaukee, Wis.—Allis-Chambers Mfg. Co.
St. Louis, Mo.—Reeves & Skinner Machinery Co.
St. Poul, Minn.—Robinson, Cary & Sands Co.
San Francisco, Cal.—Harron, Rickard & McCone.
Seattle, Wash.—Hallidie Machinery Co.
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Chicago, Ill.—McCormick Bldg.

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Columbus, O.—810 Harrison Bldg.
Dallas, Tex.—Southwestern Life Ins. Bldg.
Denver, Colo.—Hendrie & Bolthoff Mfg. Co.
Indianapolis, Ind.—1462 Lemcke Annex.
Kansas City, Mo.—R. A. Long Bldg.
Los Angeles, Cal.—Central Bldg.
Minneapolis, Minn.—Plymouth Bldg.
New York—141 Broadway.
Philadelphia, Pa.—605 Hale Bldg.
Pittsburgh, Pa.—Empire Bldg
St. Louis, Mo.—Title Guaranty Bldg.
San Francisco, Cal.—667 Mission St.
Seattle, Wash.—638 Central Bldg.
Salt Lake City, Utah—Utah Engineering & Machinery Co., 615 Newhouse Bldg.
CANADIAN OFFICES:
Calgary, Alta., Can.—S. S. Clark, 605 2nd St.
Montrael, Que.,Can.—A. M. Nichol, 301 McGill Bldg.
Toronto, Ont., Can.—C. T. Morse, 83 Wilson Ave.
Winnipeg, Man., Can.—W. P. Eddy, 214 Donald St.
Vancover, B. C., Can.—H. V. Heard, 604 Credit Foncier Bldg.

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Chicago, Ill.—421 Railway Exchange Bldg.
New York, N. Y.—165 Broadway.
St. Louis, Mo.—915 Olive St.
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Berwick, Pa.
Buffalo, N. Y.—Clinton & Babcock Sts.
Detroit, Mich.—Russell & Ferry.
Huntington, West Virginia—1st Ave. and 23rd St.
Indianapolis, Ind.—1503 Kentucky Av.
Jeffersonville, Ind.—Missouri Ave.
Madison, Ill.
Memphis, Tenn.
Milton, Pa.—Arch St.
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St. Charles, Mo.
Terre Haute, Ind.—10½ & Crawford Sts.
Wilmington, Del.

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GENERAL SALES OFFICE:
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New York, N Y.—1 Broadway.
San Francisco, Cal.—461 Market St.

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Chicago, Ill.
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AMERICAN STEAM PUMP CO.....321
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BRANCH OFFICES:
Chicago, Ill.—1220 Monadnock Bldg.
New York, N. Y.—17 Battery Place.
SALES OFFICES:
Cleveland, O.—Dravo-Doyle Co.
Indianapolis, Ind.—Dravo-Doyle Co.
Philadelphia, Pa.—Dravo-Doyle Co.
Pittsburgh, Pa.—Dravo-Doyle Co.

AMERICAN STEEL & WIRE COMPANY.....250, 406
208 So. La Salle St., Chicago, Ill.
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Baltimore, Md.—32 So. Charles St.
Birmingham, Ala.—Brown-Marx Bldg.
Boston, Mass.—120 Franklin St.
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Cincinnati, O.—Union Trust Bldg.
Cleveland, O.—Western Reserve Bldg.
Denver, Colo.—1st Natl. Bank Bldg.
Detroit, Mich.—Foot of First St
New York, N. Y.—30 Church St.
Oklahoma City, Okla.—State Natl. Bank Bldg.
Philadelphia, Pa.—Pennsylvania Bldg.
Pittsburgh, Pa.—Frick Bldg.
St. Louis, Mo.—3rd Natl. Bank Bldg.
St. Paul—Minneapolis, Minn.—Pioneer Bldg., St. Paul.
Salt Lake City, Utah—Walker Bank Bldg.
Wilkes-Barre, Pa.—Miners Bank Bldg.
Worcester, Mass.—94 Grove St.

PACIFIC COAST REPRESENTATIVES:
Los Angeles, Cal.—U. S. Steel Products Co.
Portland, Ore.—U. S. Steel Products Co.
San Francisco, Cal.—U. S. Steel Products Co.
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Boston, Mass.—84 North St.
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Cleveland, O.—404 American Trust Bldg.
Dallas, Tex.—Busch Bldg
Detroit, Mich.—1101 Chamber of Commerce Bldg.
Indianapolis, Ind.—415 John Murphy Bldg.
Kansas City, Mo.—529 Reserve Bank Bldg.
Minneapolis, Minn.—937 Plymouth Bldg.
New York—50 Church St.
Rochester, N. Y.—808 Powers Bldg.
St. Louis, Mo.—Third & Elm Sts.

AGENCIES:
Baltimore, Md.—Mr. John R. Livezey, 9-11 Commerce St.
Great Falls, Mont.—Messrs. D. E. Fryer & Co., 321 Ford Bldg.
Los Angeles, Cal.—Messrs. C. M Gay & Son, 335 Towne Ave.
New Orleans, La.—Mr. H. T. Steffee, 605-7 Baronne St.
Philadelphia, Pa.—John R. Livezey, 1933 Market St.
Portland, Ore.—Messrs. Gillon-Chambers Co., 66 North Front St.
San Francisco, Cal.—Mr. M. V. Van Fleet, Sharon Bldg., 120 Jessie St.
Seattle, Wash.—Messrs. D. E. Fryer & Co., 305 Lumber Exchange Bldg.
Spokane, Wash.—Messrs. D. E. Fryer & Co., 604 Paulsen Bldg.
Tacoma, Wash.—Messrs. D. E. Fryer & Co., National Realty Bldg.

CANADIAN OFFICES:
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Carbondale, Pa.
Chambersburg, Pa.
Chester, Pa.
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Hazleton, Pa.
Huntingdon, Pa.
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Norristown, Pa.
Oil City, Pa.
Philadelphia, Pa.
Philipsburg, Pa.
Pittsburgh, Pa.
Pittston, Pa.
Pottstown, Pa.
Pottsville, Pa.
Punxsutawney, Pa.
Reading, Pa.
Ridgway, Pa.
Scranton, Pa.
Shamokin, Pa.
Sharon, Pa.
Shenandoah, Pa.
Somerset, Pa.
Spangler, Pa.
Sunbury, Pa.
Titusville, Pa.
Uniontown, Pa.
Warren Pa.
Washington, Pa.
Waynesburg, Pa
Wellsboro, Pa.
West Chester, Pa
Wilkes-Barre, Pa.
Williamsport Pa.
Wilmington, Pa.
York, Pa.

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Allentown, Pa.—Hunsicker Bldg.
Birmingham, Ala.—724 Brown-Marx Bldg.
Boston, Mass.—209 Washington St.
Houghton, Mich.—Masonic Bldg.
Joplin, Mo.—Cosgrove Bldg.
Kansas City, Kan.—520 R. A. Long Bldg.
Knoxville, Tenn.—Holston Natl. Bank Bldg.
McAlester, Okla.—106 E. Grand Ave.
Nashville, Tenn.—Stahlman Bldg.
New Orleans, La.—1409 Whitney Central Natl. Bank Bldg.
New York, N. Y.—200 Fifth Ave.
Philadelphia, Pa.—813 Harrison Bldg.
Pittsburg, Kan.—719 N. Broadway.
Pittsburgh, Pa.—2419 Farmers Bank Bldg.
Pottsville, Pa.—Thompson Bldg.
St. Louis Mo.—1401 Wright Bldg.
Wilkes-Barre, Pa.—Peoples Bank Bldg.

AUSTIN POWDER CO......440
1229 Rockefeller Bldg., Cleveland, O.

BRANCH OFFICES:
Chicago, Ill.—Steger Bldg., 28 E. Jackson Blvd.
Detroit, Mich.—423 Trussed Concrete Bldg., 58-60 La Fayette Ave.
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AGENCIES:
Chicago, Ill.—Charles Riddell, 625 Railway Exchange Bldg.
New York, N. Y.—F. W. Weston, 50 Church St.
Portland, Ore.—A. William Henger, 722 Spalding Bldg.
Richmond, Va.—George F. Jones, 407 Travelers Bldg.
St. Louis, Mo.—C. H. Peterson, 1610 Wright Bldg.
San Francisco, Cal.—Williams, Dimond & Co., 310 Sansome St.

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New York, N. Y.—L. Cappelston, 39 Courtland St.

BRANCH OFFICES:
Cleveland, O.—Dravo-Doyle Co.
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San Francisco, Cal.—55 First St
AGENCIES:
Allentown, Pa.—W. H. Taylor Co.
Atlanta, Ga.—Southern Belting Co.
Baltimore, Md.—Carey Machinery & Supply Co
Beumont, Tex.—Norvell-Wilder Hardware Co.
Cleveland, O.—The W. Bingham Co.
Cincinnati, O.—The Queen City Supply Co.
Hazleton, Pa.—Hazleton Machinery & Supply Co.
Indianapolis, Ind.—Taylor Belting Co.
Kansas City, Mo.—English Tool & Supply Co.
Memphis, Tenn.—Towner & Co., Inc.
Nashville, Tenn.—Keith, Simmons & Co.
Nashville, Tenn.—W. & A. Semple.
New Orleans, La.—Reliance Machinery & Supply Co.
Philadelphia, Pa.—Mulconroy Co., Inc.
Pittsburgh, Pa.—J. & H. Phillips.
St. Louis, Mo.—Handlan-Buck Mfg. Co.
Scranton, Pa.—Scranton Supply & Machinery Co.
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Denver, Colo.—M. J. O'Fallon Supply Co.
New Orleans, La.—A. Baldwin & Co.
New York, N. Y.—L. R. Herritt & Co., Vanderbilt-Concourse Bldg.
Norfolk, Va.—Porter & Moore Co.
Pittsburgh, Pa.—B. S. Rederer, 1409 First Natl. Bank Bldg.
Richmond, Va.—401 Bank of Commerce Bldg.
St. Louis, Mo.—401 Bank of Commerce Bldg.
St. Paul, Minn.—R. B. Whitacre & Co.
Savannah, Ga.—Georgia Supply Co.
San Antonio, Tex.—San Antonio Machine & Supply Co.
San Francisco, Cal.—General Machinery & Supply Co.
Sidney, O.—Rhinehart Smith.
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Cleveland, O.—Buffalo Scale Co., Inc., 316 Perry-Payne Bldg., Julius Bishop.
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Los Angeles, Cal.—Herman F. Gerhard, 1026 Marsh-Strong Bldg.
Louisville, Ky.—J. B. Wilkinson, 1416 Stark Bldg.
New York, N. Y.—Richard F. Krouse, 56 Liberty St.
New Orleans, La.—301 Audubon Bldg.
Portland, Ore.—W. W. Gordon & Co., 24 Ainsworth Bldg.
Salt Lake City, Utah—H L. Price, Dooley Block.
San Francisco, Cal.—C. H. Johnson, 401 Rialto Bldg.

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Cleveland, O.—Citizens Bldg.
Detroit, Mich.—Ford Bldg.
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Birmingham, Ala.—American Trust Bldg., H. M. Perry, Mgr.
Chicago, Ill.—People's Gas Bldg., M. P. Frutchey, Mgr.
Cleveland, O.—Williamson Bldg., W. A. Armstrong, Mgr.
Duluth, Minn.—Providence Bldg., S. N. Hill, Mgr.
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Pittsburgh, Pa.—Farmers Bank Bldg., W. F. Gillies.
St. Louis, Mo.—300 N. Broadway, A. A. Bonsack, Mgr.
San Francisco, Cal.—139 Townsend St., H. L. Terwilliger, Mgr.
Seattle, Wash.—Colman Bldg., R. W. Douglass, Mgr.
DOMESTIC AGENTS:
Boston, Mass.—Ingersoll-Sergeant Drill Co., 32 Oliver St., R. K. Swift, Mgr.
Butte, Mont.—Ingersoll-Rand Co., 100 E. Broadway, R. W. Rusterholz, Mgr.
Denver, Colo.—Hendrie & Bolthoff Mfg. & Supply Co.
El Paso, Tex...Ingersoll-Rand Co., 121 San Francisco St., J. D. Foster Genl., Mgr.
Salt Lake City, Utah—Galigher Machinery Co., 224 S. W. Temple St., J. E. Galigher, Mgr.
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Grand Rapids, Mich.—Frank Simonds, 314 Sheppard Bldg.
Lexington, Ky.—Lexington Engine & Boiler Works.
Louisville, Ky.—The Pyne Co.
McAlester, Okla.—Union Iron Works.
New York—S. B. Whinery, 95 Liberty St.
New Orleans, La.—Haubtman & Loeb Co., Ltd.
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COMBUSTION ENGINEERING CORPORATION..168, 169
11 Broadway, New York, N. Y.
BRANCH OFFICES:
Atlanta, Ga.
Chicago, Ill.—Fisher Bldg.
Hazleton, Pa.—Markel Bank Bldg.
Philadelphia Office—"The Bourse." Exhibit Floor.
Salt Lake City, Utah—Dooly Block.
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Pittsburgh, Pa.—George J. Hagan Co., 401 People's Bank Bldg.

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Akron, O.—Verne W. Shear & Co., Flatiron Bldg.
Atlanta, Ga.—F. V. L. Smith, 481 Cherokee Ave.
Birmingham, Ala.—General Machinery Co., Brown-Marx Bldg.
Chicago, Ill.—Electrical Sales Engr., Inc., 19 So. Fifth Ave.
Cincinnati, O.—R. E. Ward, 816 Mercantile Library Bldg.
Denver, Colo.—Hendrie & Bolthoff Mfg. & Supply Co.,
New York, N. Y.—Fred W. Nason Co., 39 Cortlandt St.
Philadelphia, Pa.—Engineering Equipment Co., 1011 Chestnut St.
Pittsburgh, Pa.—Ludwig Hommel & Co., 422 First Ave.
Seattle, Wash.—H. G. Behneman, Inc., 617 Fourth Ave.
CANADIAN AGENCIES:
Calgary, Alta., Can.—Northern Electric Co., Ltd., 102 Eleventh Ave.
Halifax, N. S., Can.—Northern Electric Co., Ltd., 40 Sacksville St.
Regina, Sask., Can.—Northern Electric Co., Ltd.
Toronto, Ont., Can.—Northern Electric Co., Ltd., 131 Simcoe St.
Vancover, B. C., Can.—Norethern Electric Co., Ltd., 313 Water St.
Montreal, Que., Can.—Northern Electric Co., Ltd., 814 Norte Dame St.
West Winnipeg, Man., Can.—Norethern Electric Co., Ltd., 599 Henry Ave.

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Chicago, Ill.—D. H. Lucas, Ashland Block.
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Boston, Mass.—Chas. J. Jager Co., 13-15 Custom House St.
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Chattanooga, Tenn.—James Supply Co.
Chicago, Ill.—Henion & Hubbell, 217-221 N. Jefferson St.
Denver, Colo.—Hendrie & Bolthoff Mfg. & Supply Co.
Detroit, Mich.—Kerr Machinery Co.
El Paso, Tex.—El Paso Foundry & Machine Co.
Kansas City, Mo.—English Tool & Supply Co.
Knoxville, Tenn.—C. M. McClung & Co.
Los Angeles, Cal.—Chas. H. Sheldon.
Nashville, Tenn.—John Bouchard & Sons Co., 11th & Harrison St.
New York, Ralph B. Carter Co., 152 Chambers St.
Philadelphia, Pa.—W. P. Dallett, 49 N. Seventh St.
Pittsburgh, Pa.—Harris Pump & Supply Co., 320-322 Second Ave.
Providence, R. I.—Chas. J. Jager Co., 33 Canal St.
Richmond, Va.—Sydnor Pump & Well Co., 1310 E. Main St.
Salt Lake City, Utah—Salt Lake Hardware Co.
Seattle, Wash.—Perine Machinery Co.
Washington, D. C.—Columbia Pump & Well Co., 520 Twelfth St.
CANADIAN OFFICE:
Montreal, Que., Can.—Darling Bros., Ltd.

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Salt Lake City Utah—H. H. Sanderson, 46 E. 4th South St.
San Francisco, Cal.—G. W. Johannsen, 502 Mission St.
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S. Brownsville, Pa.—Second St.

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Chicago, Ill.—Peoples Gas Bldg.
Denver, Colo.—First Natl. Bank Bldg.
New York, N. Y.—50 Church St.
St. Paul, Minn.—Merchants Bank Bldg.
San Francisco, Cal.—Monadnock Bldg.

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Birmingham, Ala.—C. J. Perry, Mgr., Brown-Marx Bldg.
Chicago, Ill.—Dale Bumstead, Mgr., McCormick Bldg.
Springfield, Ill.—G. K. Larrimore.
Denver, Colo.—W. C. Howard, Mgr., Central Savings Bank Bldg.
Duluth, Minn.—F. D. Orr, Mgr., Fidelity Bldg.
Huntington, W. Va.—C. W. Phellis, Mgr., Robson-Prichard Bldg.
New York, N. Y.—F. C. Peters, Mgr., 1816 Equitable Bldg
Buffalo, N. Y.—E. N. McCarney, 510 Prudential Bldg.
Pittsburgh, Pa.—F. W. Pichard, Mgr., May Bldg., Cor. 5th and Liberty Aves.
San Francisco, Cal.—C. A. Haight, Sales Agt., Ninth Floor, Chronicle Bldg.
Seattle, Wash.—J. H. Willman, Mgr., Maynard Bldg.
Portland, Ore.—George E. Willman, 230 Stark St.
Spokane, Wash.—Harry Witt, 523 First Ave.
St. Louis, Mo.—W. E. Pratt, Mgr., Wright Bldg.
Scranton, Pa.—Henry Belin, Jr., Pres., E. I. du Pont de Nemours & Co., of Penna.

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Chicago, Ill.—2025 S. Michigan Ave., W. F. Bower.
Detroit, Mich.—David Whitney Bldg., A. O. Heister.
New York, N. Y.—206 W. 76th St., John Kelly.
San Francisco, Cal.—Edison Storage Battery Supply Co., 441 Golden Gate Ave., E. M. Cutting.
Seattle, Wash.—Edison Storage Battery Supply Co., 65 Columbia St., H. J. Mitchell.
Washington, D. C.—M. R. Hutchinson, E. E., Ph. D., 213 Southern Building.
DISTRIBUTORS:
Los Angeles, Cal.—J. F. Rogan, 441 Werdin Place.
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Chicago, Ill.—The W. R. Garton Co., 11 Desplaines St.
Cleveland, O.—Cooke-Wilson Co. of Ohio, 714 Columbia Bldg.
Denver, Colo.—Mine & Smelter Supply Co.
El Paso, Tex.—Mine & Smelter Supply Co.
Jellico, Tenn.—Arthur L. Ware.
Knoxville, Tenn.—C. M. McClung & Co.
New York, N. Y.—J. G. Kipp, 30 Church St.
Pittsburgh, Pa.—Cooke-Wilson Electric Supply Co., Penn Ave. & 3rd.
St. Louis, Mo.—Grayson Railway Supply Co., 405 La Salle Bldg.
Salt Lake City, Utah—The O. H. Davidson Equipment Co.
Seattle, Wash.—H. G. Behneman 316 James St.

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Scranton, Pa.—Engineer's Club, 415 Washington Ave.
AGENCIES:
Birmingham, Ala.—McClary-Jemison Machinery Co.
Los Angeles, Cal.—Eccles & Smith Co.
Portland, Ore.—Eccles & Smith Co.
San Francisco, Cal.—Eccles & Smith Co.
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CANADIAN AGENCIES:
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Chicago, Ill.—Marquette Bldg.
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Denver, Colo.—Geo. D. Luther, Soliciting Agent, 1424 Wazee St.
Detroit, Mich.—208 Hayward Bldg., 961,971 Woodward Ave.
Los Angeles, Cal.—Pierson, Roeding & Co., Pacific Electric Bldg.
New York, N. Y.—100 Broadway.
Pittsburgh, Pa.—Keystone Bldg.
Rochester, N. Y.—44 Cortland St.
St. Louis, Mo.—H. B. Marshall Soliciting Agent, Fullerton Bldg.
San Francisco, Cal.—Pierson, Roeding & Co., 118-130 New Montgomery St.
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Knoxville, Tenn.—Webster & Co., Bank & Trust Bldg.
Philadelphia, Pa.—Thos. B. Whitney, 33 South 16th St.
Pittsburgh, Pa.—Gellacty & Co., Union Bank Bldg.

EPPING-CARPENTER PUMP CO.....337
Pittsburgh, Pa.
BRANCH OFFICES:
Baltimore, Md.—T. A. Wilkinson, 915 Equitable Bldg.
Birmingham, Ala.—John S. Jemison, First Natl. Bank Bldg.
Chicago, Ill.—Western Pump & Engineering Co.
Cleveland, O.—328 Champlain Ave.
Huntington, W. Va.—Banks Supply Co
New York, N. Y.—90 West St.
Philadelphia, Pa.—1108 Harrison Bldg.
Rochester, N. Y.—Alden L. Covill, 728 Granite Bldg.

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FAIRBANKS, MORSE & CO., ...104, 338, 415
900 S. Wabash Ave., Chicago, Ill.
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Atlanta, Ga.	Louisville, Ky.
Baltimore, Md.	Minneapolis, Minn.
Boston, Mass	Milwaukee, Wis.
Chicago, Ill.	New Orleans, La.
Cincinnati, O.	New York, N. Y.
Cleveland, O.	Omaha, Neb.
Denver, Colo.	Portland, Ore.
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Pittsburgh, Pa.—S. M. Casterline, 1218 Boyle St.
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Pittsburgh, Pa.—W. O. Beyer, 1024 Park Bldg.
San Francisco, Cal.—F. W. Grimwood, Rialto Bldg.
Wilkes-Barre, Pa.—Vulcan Iron Works.

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Scranton, Pa.—Francis H. Coffin & Co., Board of Trade Bldg.

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Chicago, Ill.—Clapp, Norstrum & Riley, 12 So. Canal St.
Cincinnati, O.—Geo. B. Curd, Merchants Bldg.
Cleveland, O.—McKenna Co.
Huntington, W. Va.—Banks Supply Co.
Jacksonville, Fla.—H. E. Ploof Machinery Co.
Little Rock, Ark.—C. E. Rosenbaum Machinery Co.
Menphis, Tenn.—Riechman-Crosby Co.
New York, N. Y.—Lenher Engineering Co., 100 Broadway.
Norfolk, Va.—Henry Walke Co
Philadelphia, Pa.—Allen Engineering Co., 907 Penna. Bldg.
Pittsburgh, Pa.—Baird Machinery Co., 125 Water St.
Portland, Ore.—Zimmerman, Wells Brown Co.
San Francisco, Cal.—A. L. Young Machinery Co.
Spokane Wash.—Hallidie Co.
CANADIAN AGENTS:
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New Glasgow, N. S., Can.—I. Matheson Co.
Winnipeg, Man., Can.—Kelly Powell, Ltd., 602 McArthur Bldg.

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Houston, Tex.—Ahrens & Ott Mfg. Co.
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FULTON BAG & COTTON MILLS.....225
330 Wythe Ave., Brooklyn, N. Y.
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Atlanta, Ga.—South Blvd. & So. R. R.
Dallas, Tex.—Preston St. & Pacific Ave.
New Orleans, La.—So. Peters & Gainnie Sts.
Oklahoma City.—Okla.—719 Insurance Bldg.
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Chicago, Ill.—Lott Mine Equipment Co., 7031 So. Chicago Ave.
Huntington, W Va.—Banks Supply Co.

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REPRESENTATIVES:
Pittsburgh, Pa.—The Hartzell Sales Co., 1510 Arrott Bldg.
St. Louis, Mo.—W. R. Young, 5841 Mina Place.

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GARTON, W. R., CO., THE.....418
11 to 17 South Desplaines St., Chicago, Ill.

GEM MANUFACTURING CO.....200
N. S. Pittsburgh, Pa.
BRANCH OFFICES:
Chicago, Ill.—Messrs. Stoker & Storr, 180 No. Dearborn St.
New York, N. Y.—Mr. Walter Waghorn, Room 810, 1123 Broadway.
Philadelphia, Pa.—Mr. W. H. Filley, 1502 Real Estate Trust Bldg.

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Atlanta, Ga.—Third Natl. Bank Bldg.
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Birmingham, Ala.—Brown-Marx Bldg.
Boston, Mass.—84 State St.
Butte, Mont.—Electric Bldg.
Chicago, Ill.—Monadnock Bldg
Chattanooga, Tenn.—James Bldg
Cincinnati, O.—Provident Bank Bldg.
Cleveland, O.—Illuminating Bldg.
Charleston, W. Va.—Charleston Natl. Bank Bldg.
Charlotte, N. C.—Commercial Natl. Bank Bldg.
Columbus, O.—Columbus Sav. & Trust Bldg.
Dayton, O.—Schwind Bldg
Denver, Colo.—First Natl. Bank Bldg.
Buffalo, N. Y.—10th Floor Elec. Bldg.
Des Moines, Ia.—Hippee Bldg.
Detroit, Mich.—G. E. Co., of Michigan, Dime Savings Bank Bldg.
Dallas, Tex.—1701 N. Market St.
Duluth, Minn.—Fidelity Bldg.
El Paso, Tex.—500 San Francisco St.
Erie, Pa.—Marine Natl. Bank Bldg.
Elmira, N. Y.—Hulett Bldg.
Ft. Wayne, Ind.—Ft. Wayne Electric Works.
Houston, Tex.—3rd & Washington Sts.
Indianapolis, Ind.—Traction Terminal Bldg.
Jackson, Fla.—Heard Nat. Bank Bldg.
Joplin, Mo.—Miners Bank Bldg.
Kansas City, Mo.—Dwight Bldg.
Knoxville, Tenn.—Bank & Trust Bldg.
Los Angeles, Cal.—124 W. 4th St.
Louisville, Ky.—Starks Bldg.
Memphis, Tenn.—Randolph Bldg.
Milwaukee, Wis.—Public Service Bldg.
Minneapolis, Minn.—410 Third Ave., North.
Nashville, Tenn.—Stahlman Bldg.
New Orleans, La.—Maison-Blanche Bldg.
New Haven, Conn.—Hartford Natl. Bank Bldg.
New York, N. Y.—Hudson Terminal Bldg., 30 Church St.
Niagara Falls, N. Y.—Gluck Bldg.
Omaha, Neb.—Union Pacific Bldg.
Oklahoma City, Okla.—Insurance Bldg.
Philadelphia, Pa.—Witherspoon Bldg.
Pittsburgh, Pa.—Oliver Bldg.
Portland, Ore.—Electric Bldg.
Providence, R. I.—1012 Turks Head Bldg.
Rochester, N. Y.—Granite Bldg.
Richmond, Va.—Virginia Rwy. & Pr. Bldg.
Salt Lake City, Utah—Newhouse Bldg.
San Francisco, Cal.—Rialto Bldg.
Schenectady, N. Y.—G. E. Works.
Seattle, Wash.—Colman Bldg.
St. Louis, Mo.—Pierce Bldg.
Springfield, Mass.—Mass. Mutual Bldg.
Spokane, Wash.—Paulsen Bldg
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Cincinnati, O.—220 E. 4th St.
Denver, Colo.—Lindrooth-Shubert & Co., Boston Bldg.
Pittsburgh, Pa.—2218 Farmers Bank Bldg.
St. Louis, Mo.—1501 Boatman's Bank Bldg.
Seattle, Wash.—L. W. Shirley, 512½ First Ave., South.

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Birmingham, Ala.—424 S. 20th St.
Boston, Mass.—851 Boylston St.
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Chicago, Ill.—1925 Michigan Ave.
Denver, Colo.—1422 Court Place.
Detroit, Mich.—Woodward Ave. & Hancock.
Joplin, Mo.—216 W. Fourth St.
Los Angeles, Cal.—11th & Oliver Sts.
New York, N. Y.—1780 Broadway.
Norfolk, Va.—223 Water St.
Philadelphia, Pa.—519 N. Broad St.
San Francisco, Cal.—401 Mission St.
Seattle, Wash.—113 King St.
London, England, 117 Golden Lane, E. C.
Syracuse, N. Y.—117 W. Taylor St.
SPECIAL DISTRIBUTORS:
Akron, O.—Union Rubber Co.
Atlanta Ga.—Southern Rubber & Supply Co.
Beaumont, Tex.—E. L. Wilson Hardware Co.
Cincinnati, O.—Atlas Rubber & Belting Co.
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Indianapolis, Ind.—Central Rubber & Supply Co.
Jacksonville, Fla.—J. G. Christopher Co.
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Boston, Mass.—61 Brookline Ave.
Brooklyn, N. Y., 1172 Bedford Ave.
Buffalo, N. Y.—1013 Main St.
Butte, Mont.—Iron St. and Nevada Ave.
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Chicago, Ill.—1601 So. Michigan Ave.
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Cleveland, O.—1733-35 Euclid Ave.
Columbus, O.—87 North Fourth St.
Dayton, O.—15 E. Second St.
Denver, Colo.—1541 Lincoln St.
Des Moines, Ia.—1022-24 W. Locust St.
Detroit, Mich.—340-342 Jefferson Ave.
Fresno, Cal.—Cor. "K" and Merced Sts.
Grand Rapids, Mich.—225 So. Division.
Hartford, Conn.—26 High St.
Indianapolis, Ind.—Walnut St. and Capitol Ave.
Jacksonville, Fla.—924-26 Main St.
Kansas City Mo.—1417-1419 McGee St.
Los Angeles, Cal.—1200 So. Olive St.
Long Island City, L. I.—Jackson Ave & Honeywell St.
Louisville, Ky.—331 East Broadway.
Memphis, Tenn.—620 Marshall Ave.
Milwaukee, Wis.—280 E. Water St.
Minneapolis, Minn.—1201 Hennepin Ave.
Nashville, Tenn.—911 Broadway, South.
Newark, N. J.—28 Halsey St.
New Orleans, La.—536-38 Baronne St.
Manhattan Service Sta.—207 W. 50th St., New York Mechanical Goods, 30 Church St.
Oakland, Cal.—2730 Broadway.
Omaha, Neb.—2549-51 Farnam St.
Philadelphia, Pa.—207-9 No. Broad St.
Pittsburgh, Pa.—5952-54 Baum Blvd., Mechanical Goods, 339 Second Ave.
Portland, Me.—646 Congress St.
Portland, Ore.—104 No. 14th St.
Providence, R. I.—28 Custom House St.
Richmond, Va.—325 W. Broad St.
Rochester, N. Y.—Court & Cortland Sts.
Sacramento, Cal.—1020-22 Eleventh St
St. Louis, Mo.—1909-11 Locust St.
St. Paul, Minn.—167 West Sixth St.
Salt Lake City, Utah—136 E. Broadway
San Diego, Cal.—1166 "B" St.—Warehouse only.
San Francisco, Cal.—Cor. Sutter & Van Ness Aves. Mechanical Goods, 610 Mission St.
Scranton, Pa.—314 Washington Ave. North.
Seattle, Wash.—814-816 E. Pike St.
Sioux City, Ia.—513 Sixth St.
Spokane, Wash.—1405-1407 First Ave
Springfield, Mass.—28 Worthington St.
Syracuse, N. Y.—436 So. Warren St.
Tacoma, Wash.—774 Commerce St.
Toledo, O.—1320 Madison Ave.
Utica, N. Y.—213 Elizabeth St.
Washington, D. C.—1016 14th St. N. W.
Worcester, Mass.—671 Main St.
AGENCIES:
Dallas Tex.—2014-16 Commerce St.
El Paso, Tex.—308 Mills St.
Houston, Tex.—1118 Main St.
Oklahoma City, Okla.—511 No. Broadway.
San Antonio, Tex.—311 Avenue "C".
CANADIAN OFFICE:
Toronto, Ont., 152 Simcoe St.

GOULDS MANUFACTURING CO. 340
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Atlanta, Ga.—Third Natl. Bank Bldg.
Boston, Mass.—58 Pearl St.
Chicago, Ill.—3801-3811 S. Ashland Ave.
Houston, Tex.—1001 Carter Bldg.
New York, N. Y.—16 Murray St.
AGENCIES:
Cleveland, O.—Robert R. Harkins, Schofield Bldg.
Los Angeles, Cal.—Smith-Booth-Usher Co.
Philadelphia, Pa.—H. E. Trotman, 111 N. 3rd St.
Pittsburgh, Pa.—Reineke-Wagner Pump & Supply Co., 416-18 First Ave.

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30 E. 42nd St., New York, N. Y.
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Boston, Mass.—347 Newbury St.
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AGENCIES:
Aberdeen, Wash.—Grays Harbor Hardware Co.
Baltimore, Md.—John B. Adt.
Baltimore, Md.—Shepherd-Flaharty Elec. Co.
Barre, Vt.—C. W. Averill & Co.
Bath, Me.—Frank A. Palmer.
Birmingham, Ala.—Turner Elec. Supply Co.
Birmingham, Ala.—The Young & Vann Supply Co.
Biloxi, Miss.—W. O. Clark.
Boston, Mass.—Perrin, Seamans & Co.
Brooklyn, N. Y.—Brooklyn Electric Supply Co.
Charleston, S. C.—J. J. W. Luden & Co.
Chattanooga, Tenn.—Rodgers-Bailey Hardware Co.
Cincinnati, O.—Cincinnati Railway Supply Co.
Columbus, O.—Avery-Loeb Electric Co.
Denver, Colo.—Sterns-Roger Mfg. Co.
Detroit, Mich.—Henry L. Walker Co.
Duluth, Minn.—Marshall-Wells Hardware Co.
El Paso, Tex.—Krahauer, Zork & Moye's Successors, Inc.
El Paso, Tex.—J. E. Robertson & Co.
Hancock, Mich.—(Special Agent) E. J. Leach.
Hartford, Conn.—L. L. Ensworth & Son.
Huntington, W. Va.—The Miller Supply Co.
Indianapolis, Ind.—Indianapolis Electric Supply Co.
Jacksonville Fla.—Geo. E. Chase & Co.
Jacksonville, Fla.—Livingstone, Yonge & Co.
Kansas City, Mo.—B-R Electric & Telephone Co
Kansas City, Mo.—Carr Mfg. Co.
Los Angeles, Cal.—Harper & Reynolds Co.
Los Angeles, Cal.—Tay-Pike Co.
Milwaukee, Wis.—Badger-Packard Machinery Co.
Minneapolis, Minn.—R. M. Laird.
Mobile, Ala.—Mobile Ship Chandlery Co.

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Nashville, Tenn.—Nashville Machine Co.
New London, Conn.—Darrow & Comstock.
New Orleans, La.—A. Baldwin & Co.
New Orleans, La.—Federal Sign System (Elec.)
New York, N. Y.—Central Electrical Supply Co., 4 W. 16th St.
New York, N. Y.—Motley, Green & Co., 68 Broad St.
Norfolk, Va.—Woodhouse Electric Co.
Parkersburg, W. Va.—J. J. Crotty & Co.
Philadelphia, Pa.—Burrows, Sloan & Co.
Philadelphia, Pa.—Lewis-Roth Co.
Pittsburgh, Pa.—W. T. McCullough Elec. Co., 2315 Penn Ave.
Portland, Ore.—The Marshall-Wells Hardware Co.
Providence, R. I.—Walter Coleman & Sons.
Richmond, Va.—W. H. Jenks.
Rockland, Me.—Francis Cobb & Co.
Savannah, Ga.—The Paulsen Co.
St. Louis, Mo.—Continental Supply Co.
St. Louis, Mo.—The Wesco Supply Co.
Spokane, Wash.—The Marshall-Wells Hardware Co.
Syracuse, N. Y.—Burhans & Black Co.
Utica, N. Y.—B. & C. Electric Supply Co.
Utica, N. Y.—David S. Foster, Sons & Co.
Washington, D. C.—Barber & Ross.
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New York, N. Y—30 Church St.
REPRESENTATIVES:
Birmingham, Ala.—E. Francis McCrossin, Box 29.
Chicago, Ill.—R. B. Clark, Jr., Monadnock Block.
Chicago, Ill.—Earl L. Petterson, Pioneer Press Bldg.
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Salt Lake City, Utah—717 Newhouse Bldg.
San Francisco, Cal.—Chronicle Bldg.
Joplin, Mo.—Independent Bldg
New York, N. Y.—120 Broadway.
Denver, Colo.—317-319 Century Bldg.
St. Louis, Mo.—1624 Pierce Bldg.
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SUBSIDIARY:
Hercules Powder Sales Co., Bank of Commerce & Trust Bldg., Memphis, Tenn.

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314-124 N. 12th St., Philadelphia, Pa.
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New York, N. Y.—30 Church St., Mr. Stephen H. Payne
Pittsburgh, Pa.—324 Diamond St., Mr. M. Marks.
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803 Markle Bank Bldg., Hazleton, Pa.
AGENCIES:
Apalache, Va.—Virginia Wholesale Co.
Ashland, Ky.—Ben Williamson Hardware Co.
Altoona, Pa.—Standard Supply & Equipment Co.
Bluefield, W. Va.—Bluefield Hardware Co.
Charleston, W. Va.—Charleston Hardware Co.
Chicago, Ill.—Chas. H. Briggs & Co., 231 N. 5th Ave.
Greensburg, Pa.—Probst & Son.
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Detroit, Mich.—Kenneth Anderson Co.
Muskogee, Okla.—Atlas Supply Co.
Kansas City, Mo.—English Tool & Supply Co.
Portland, Me.—W. L. Blake & Co.
New York, N. Y.—Mr. Frank Boyle, 428 Park Row Bldg.
Little Rock, Ark.—Geo. A. Boosey, 304 E. Markham St.
Philadelphia, Pa.—Brogan and Company, 810 Race St.
Dallas, Tex.—Briggs-Weaver Machinery Co.
Providence, R. I.—E. M. Dart Manfacturing Co., 136 Clifford St.
Tampa, Fla.—Cameron & Barkley Co.
Jacksonville, Fla.—J. G. Christopher Co.
St. Louis, Mo.—Donovan Iron & Supply Co.
Erie, Pa.—Erie Manufacturing & Supply Co.
Salt Lake City, Utah—Gallagher Machinery Co.
Denver, Colo.—Hendrie & Bolthoff Mfg. & Supply Co.
Houston, Tex.—F. W. Heitman & Co.
Indianapolis, nId.—Indianapolis Belting & Supply Co.
El Paso, Tex.—Krakauer, Moyes & Zork Co.
Cincinnati, O.—E. A. Kinsey Co.
Everett, Wash.—Lloyd Manufacturing Agency.
Louisville, Ky.—E. D. Morton & Co.
Fort Smith, Ark.—Meister Brothers-Bracht Co.
Oklahoma City, Okla.—Mideke Supply Co.
San Francisco, Cal.—Marshall-Newell Supply Co.
Memphis, Tenn.—N. O. Nelson Co.
Chicago, Ill.—McMaster-Carr Supply Co., 174 No. Market St.
Richmond, Va.—James McGraw & Co., 1440 East Main St.
Oil City, Pa.—Oil Well Supply Co.
Beaver Falls, Pa.—H. S. Palmer Supply Co.
Cleveland, O.—W. M. Pattison Supply Co.
Warren, Pa.—Pickett Hardware Co.
Minneapolis, Minn.—Power Equipment Co.
Buffalo, N. Y.—J. H. Ruckel & Son.
McAlester, Okla.—Russell Hardware Co.
Seattle, Wash.—Steam Speciality & Rubber Co.
Scranton, Pa.—Charles B. Scott Co.
Los Angeles, Cal.—Smith-Booth-Usher Co., 238 Central Ave.
Savannah, Ga.—Savannah Supply Co., West Bay St.
San Antonio, Tex.—San Antonio Machine & Supply Co.
Fort Worth, Tex.—Texas Manufacture Co.
Portland, Ore.—The Tomlinson Co.
Knoxville, Tenn.—Tennessee Mill & Mine Co.
Omaha, Neb.—United States Supply Co.
Tacoma, Wash.—Walsh & Gardner.

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New Orleans, La.—Woodward, Wight & Co.
Butte, Mon.—Western Mining Supply Co.
Birmingham, Ala.—Young & Vann Supply Co.
Troy, N. Y.—Mr. Fred K. Blanchard, 422 River St.
Boston, Mass.—Braman, Dow & Co.
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Birmingham, Ala.—American Trust Bldg., H. M. Perry, Mgr.
Boston, Mass.—32 Oliver St., R. K. Swift, Mgr.
Buffalo, N. Y.—114 Claremont Ave.
Butte, Mont.—109 E. Broadway, R. W. Rusterholz, Mgr.
Chicago, Ill.—Peoples' Gas Bldg., M. P. Frutchey, Mgr.
Cleveland, O.—Williamson Bldg., W. A. Armstrong Mgr.
Denver, Colo.—1718 California St., Stearns-Roger Mfg. Co.
Duluth, Minn.—Providence Bldg., S. H. Hill, Mgr.
El Paso, Tex.—121 San Francisco St., J. D. Foster, Mgr.
Houghton, Mich.—Citizens Natl. Bank Bldg., Thos. F. Lynch, Mgr.
Joplin, Mo.—111 West Third St.
Knoxville, Tenn.—Holston Natl. Bank Bldg., L. F. Thompson, Mgr.
Los Angeles, Cal.—1035 Union Oil Bldg., W. Blackburn, Mgr.
Mexico City, Mex.—Cadena No. 2.
New Orleans, La.—Hibernia Bank Bldg.
Philadelphia, Pa.—Commercial Trust Bldg., Phil. Weiss, Mgr.
Pittsburgh, Pa.—Farmers Bank Bldg., W. F. Gillis, Mgr.
St. Louis, Mo.—300 N. Broadway, A. A. Bonsack, Mgr.
Salt Lake City, Utah—224 S. W. Temple St., Galigher Machinery Co.
San Francisco, Cal.—139 Townsend St., H. L. Terwilliger, Mgr.
Seattle, Wash.—Colman Bldg., R. W. Douglass, Mgr.
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IRON CITY ELECTRIC CO......420
711 Grant St., Pittsburgh, Pa.
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Columbus, O.—C. S. Coleman, 91 Hoffman Ave.
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Birmingham, Ala.—Brown-Marx Bldg., C. M. Blanchard.
Broadwell, O.—H. H. Townsend.
Chicago, Ill.—1801 McCormick Bldg.
Geo. B. Ellstrom, S. S. Shive.
Denver, Colo.—1st Natl. Bank Bldg., Frank R. Field and E. C. Horn.
Middlesboro, Ky.—J. L. Moore.
New York, N. Y.—50 Dey St., F. C. Ayers W. C. Miller, G. H. Mueller and J. B. Noros.
Philadelphia, Pa.—1119 Real Estate Trust Bldg., J. G. Ogden.
Pittsburgh, Pa.—1710 Farmers Bank Bldg., C. H. Fisher, J. H. McKinley and W. W. Woodruff.
CANADIAN OFFICE:
Montreal, Que., Can.—Power Bldg., M. W. Sherwood.
AGENTS:
Atlanta, Ga.—Cotton States Belt & Supply Co.
Baltimore, Md.—Carey Machinery & Supply Co.
Boston, Mass.—H. C. Freeman & Co., 141 Milk St.
Buffalo, N. Y.—Hendee Connor Co.
Cedar Rapids, Ia.—Cedar Rapids Pump Co.
Charleston, S. C.—Bailey Lebby Co., Meeting St.
Charleston, W. Va.—Charleston Electrical Supply Co.
Cincinnati, O.—Wirthlin-Mann Co.
Cleveland, O.—Strong Carlisle & Hammond Co.
Erie, Pa.—Weller Warfels Co.
Fort Smith, Ark.—Meister Brothers-Bracht Co.
Houston, Tex.—Peden Iron & Steel Co.
Indianapolis, Ind.—Indianapolis Belting & Supply Co.
Jacksonville, Fla.—Georgia Supply Co.
Kansas City, Mo.—Revere Rubber & Supply Co.
Little Rock, Ark.—Thomas L. Cox & Sons.
Los Angeles, Cal.—Smith-Booth Usher Co
Louisville, Ky.—W. H. Neill Co.
Memphis, Tenn.—Reichman-Crosby Co.
Milwaukee, Wis.—American Machinery & Cons. Co.
Minneapolis, Minn.—Frank J. Rose Co.
Montgomery, Ala.—Alabama Machinery & Supply Co.
Nashville, Tenn.—Keith-Simmons Co.
New Bern, N. C.—Hyman Supply Co.
New Orleans, La.—B. N. Davis.
Norfolk, Va.—Henry Walke Co.
Portland, Ore.—Portland Machinery & Supply Co.
Richmond, Va.—Smith-Courtney Co.
St. Louis, Mo.—Crockwell Mine & Mill Supply Co.
St. Marys, O.—Jasperson Supply Co.
Salt Lake City, Utah—R. J. Glendinning & Co.
San Francisco, Cal.—General Machinery & Supply Co.
Savannah, Ga.—Georgia Supply Co.
Syracuse, N. Y.—Syracuse Supply Co.
Toledo, O.—Standard Mfg. Co.
Troy, N. Y.—Tolhurst Machine Works.
Utica, N. Y.—Smyth-Despard Co.
Washington, D. C.—McKeel Richardson Co.
Wilmington, N. C.—Hyman Supply Co.
CANADIAN AGENTS:
Winnipeg, Man., Can.—N. J. Dinnen Co.
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Fort Wayne, Ind.—National Mill Supply Co.
Macon Ga.—Schofield Sons Co.
Sherman, Tex.—Hardwicks-Etter Hardware Co.

JENKINS BROS......190
80 White St., New York, N. Y.
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Akron, O.—717 Second Natl. Bank Bldg.
Albany, N. Y.—260 Central Ave.
Atlanta, Ga.—31-A S. Broad St.
Baltimore, Md.—207-213 E. Saratoga St.
Birmingham, Ala.—2028 Avenue B.
Boston, Mass.—55-61 High St., H. R. Trainer, Mgr.
Boston, Mass.—74 Brookline Ave.
Buffalo, N. Y.—206-208 Main St.
Chicago, Ill.—322 N. Michigan Ave., T. G. Younglove, Mgr.
Chicago, Ill.—1428 S. Michigan Ave.
Cincinnati, O.—654-656 Main St.
Cleveland, O.—813-15 Superior Ave., N. W., Harry Gillett, Mgr.
Columbus, O.—45 West Long St.
Dallas, Tex.—503 Sumpter Bldg.
Dayton, O.—259 Fourth St., Arcade.
Denver, Colo.—534 Denver Gas & Elec. Bldg.
Detroit, Mich.—72 Jefferson Ave., H. O. Herrick, Mgr.
Detroit, Mich.—874 Woodward Ave.
Duluth, Minn.—327 West First St.
Galveston, Tex.—2209-11 Strand St.
Houghton, Mich.—96 Shelden St.
Houston, Tex.—403 Texas Company Bldg.
Indianapolis, Ind.—408-410 Capitol Ave.
Kansas City, Mo.—1514 Grand Ave.
Los Angeles, Cal.—1232-34 S. Grand Ave.
Louisville, Ky.—659-661 S. Fourth Ave.
Menphis, Tenn.—274 Monroe St.
Milwaukee, Wis.—201-231 Clybourn St., T. T. Lyman, Mgr.
Milwaukee, Wis.—96 Second St.
Minneapolis, Minn.—18 S. Eighth St.
New Orleans, La.—Magazine & Gravier Sts.
New York, N. Y.—Madison Ave. & 41st St., J. J. Greene, Mgr.
New York, N. Y.—1930 Broadway.
Newark, N. J.—239 Halsey St.
Omaha, Neb.—1003 Farnam St.
Philadelphia, Pa.—21, 23, & 25 N. Second St., E. Searing, Mgr.
Philadelphia, Pa.—510-512 N. Broad St.
Pittsburgh, Pa.—100-102 Wood St., G. R. Folds, Mgr.
Pitsburgh, Pa.—416 N. Craig St.
Portland, Ore.—69 Broadway.
Rochester, N. Y.—521 Chamber of Commerce.
St. Louis, Mo.—501-505 N. Third St., G. W. Anderson, Mgr.
St. Louis, Mo.—3120 Locust St.
St. Poul, Minn.—205 Ryan Bldg.
Salt Lake City, Utah—408-9 Dooley Block.
San Francisco, Cal.—2d & Howard Sts., W. S. Greenfield, Mgr.
San Francisco, Cal.—1247-49 Van Ness Ave.
Seattle, Wash.—1020 S. First Ave., D. W. Boylan, Mgr.
Syracuse, N. Y.—344 Gurney Bldg.
Toledo, O.—213 Water St.
Washington, D. C.—Builders & Mfgrs. Bldg.
Wilkes-Barre, Pa.—Coal Exchange Bldg.
Youngstown, O.—502 Stambaugh Bldg.
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Montreal, Que., Can.—450-452 St. James St.
Toronto, Ont., Can.—19 E. Front St., W. H. Hiller, Mgr.
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Minneapolis, Minn.—427 Washington Ave.
New York, N. Y.—100 John St.
Pittsburgh, Pa.—209 Third Ave.
St. Louis, Mo.—105 Main St.
Syracuse, N. Y.—319 Seitz Bldg.
Washington, D. C.—1111 Fourteenth St.
AGENTS:
Atlanta, Ga.—Clayton S. Berry, 46 Fairlie St.
Baltimore, Md.—Chespeake Rfg. & Pipe Covering Co., 117 Cheapside.
Baltimore, Md.—Wallace & Gale, 115 S. Gay St.
Chattanooga, Tenn.—Porter Warner, Room 320 Hamilton Natl. Bank Bldg.
Detroit, Mich.—S. P. Conkling, 68 Jefferson Ave.
Kansas City, Mo.—R. V. Aycock & Co., 1509 Walnut St.
New Orleans, La.—J. T. Mann & Co., 909 Union St.
Philadelphia, Pa.—Magnesia Covering Co., 1310 N. American Bldg.
Portland Ore.—Gillen Chambers Co., 66 N. Front St.
San Francisco, Cal.—J. A. Drummond, 725 Chronicle Bldg.
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Wilkes-Barre, Pa.—W. E. Steelman Co., 85 N. Main St.

KEELER, E. COMPANY.....159
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Buffalo, N. Y.—Buffalo Metal Goods Co., 184-210 Winchester Ave.
Chicago, Ill.—J. F. Davis, 1409 Harris Trust Bldg.
Cleveland, O.—Strong, Carlisle & Hammond, 326-44 Frankfort Ave., N. W.
Dallas Tex.—Arthur Wright, 209 Slaughter Bldg.
Huntington, W. Va.—The Banks Supply Co.
Los Angeles, Cal.—Pacific Coast Mfg. Co., 126-28 S. Los Angeles St.
Lynchburg, Va.—Hawkins-Hamilton Co., Inc., Peoples Natl. Bank Bldg.
New York, N. Y.—A. B. Dean; A. C. Lippincott; 50 Church St., Room 1878.
New Orleans, La.—A. Baldwin & Co.
Philadelphia, Pa.—J. W. Parker; G. L. Jones; 1531 Real Estate Trust Bldg.
Pittsburgh, Pa.—E. F. Wilson, 1601 Arrott Bldg.
Portland, Ore.—Power Equipment Co., 816-17 Lewis Bldg.
Richmond, Va.—J. L. Lindsay, Inc., 1321 E. Main St.
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San Francisco, Cal.—L. F. Halloran, 604 Mission St.

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New Orleans, La.—609 Chartres St.
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Pittsburgh, Pa.—Jenkins Arcade Bldg.
San Francisco, Cal.—268 Market St.
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Norfolk Va.—John Westbrook, Inc., 265 Water St.
Minneapolis, Minn.—Stacy-Bates Co., 815 McKnight Bldg.
Seattle, Wash.—Hallidie Machinery Co., Inc., Corner Occidental Ave. and King St.
Los Angeles, Cal.—Collins & Webb, Inc., 412 East 3rd St.
New Orleans, La.—A. F. Delbert, 849 Barronne St.
Fort Wayne, Ind.—Bass Foundry & Machine Co.

LAWRENCEVILLE BRONZE COMPANY.....483
31st St. & Penn Ave., Pittsburgh, Pa.
REPRESENTATIVES:
Chicago, Ill.—Mr. Geo. W. Talmage, 60 East Lake St.
Philadelphia, Pa.—Mr. Ed. G. Loose, 2315 N. 18th St.
New York, N. Y.—Mr. Ellsworth Haring, 114-118 Liberty St.

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San Francisco Store—Monadnock Bldg.

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521 West 23rd St., New York, N. Y.
SALES OFFICES:
Birmingham, Ala.—First Natl. Bank Bldg.
Cleveland, O.—Wade Bldg.
New Orleans, La.—Hennen Bldg.
Pittsburgh, Pa.—Westinghouse Bldg.

LIDGERWOOD MFG. CO.....240
96 Liberty St., New York, N. Y.
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Chicago, Ill.—Fisher Bldg.
Philadelphia, Pa.—Commercial Trust Bldg.
Pittsburgh, Pa.—Union Bank Bldg
Seattle, Wash.—807 Western Ave.

LIFE SAVING DEVICES CO.....469
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39th St. & Stewart Ave., Chicago, Ill.
BRANCH OFFICES:
Boston, Mass.—49 Federal St.
Buffalo, N. Y.—698 Ellicott Square.
Cleveland, O.—1304 Rockefeller Bldg.
Detroit, Mich.—911 Dime Bank Bldg.
Los Angeles, Cal.—204 N. Los Angeles St.
New York, N. Y.—299 Broadway.
Pittsburgh, Pa.—1501-2 Park Bldg.
Portland, Ore.—14th & Lovejoy Sts
St. Louis, Mo.—Central Natl. Bank Bldg.
Seattle, Wash.—580 S. First Ave.
Wilkes-Barre, Pa.—2d Natl. Bank Bldg.
SALES OFFICES:
Birmingham, Ala.—General Machinery Co., 546 Brown-Marx Bldg.
Denver Colo.—Lindrooth, Shubert & Co.
Knoxville, Tenn.—D. T. Blakey, 704 Empire Bldg.
Louisville, Ky.—Frederick Wehle, 1121 Starks Bldg.
Minneapolis, Minn.—Link-Belt Supply Co., 418 S. Third St.
Mobile, Ala.—Turner Supply Co., St. Louis & Commerce Sts.
New Orleans La.—C. O. Hinz, 612 Hibernia Bank Bldg.
New Orleans, La.—Whitney Supply Co., 418 S. Peters St.
Philadelphia, Pa.—Hunting Park Ave. & P. & R. Ry.
San Francisco, Cal.—The Eby Mchy. Co., 35 Main St.
CANADIAN REPRESENTATIVES:
Brantford, Ont., Can.—Waterous Engine Works Co., Ltd.
Montreal, Que., Can.—Williams & Wilson, Ltd.
Toronto, Can.—Canadian Link-Belt Co., Ltd.

LOBDELL CAR WHEEL COMPANY.....270, 271
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New York, N. Y.—6 Church St., G. S. Thompson, Mgr.
REPRESENTATIVES:
Bluefield, W. Va.—F. M. Archer.
Norton, Va.—Norton Electric Supply & Equipment Co.

LYNCHBURG FOUNDRY CO.....351, 352, 353
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Chicago, Ill.—Peoples Gas Bldg.
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Scranton, Pa.
BRANCH OFFICES:
New York, N. Y.—Room 351, 50 Church St., S. C. Smith.
Boston, Mass.—202 Equitable Bldg., S. C. Smith.
Chicago, Ill.—708 Fisher Bldg., F. G. Smith.
Philadelphia, Pa.—34 N. Woodlawn Ave., Aldan, Del. Co., (suburb of Phila.) Geo. Blair, Jr.
Buffalo, N. Y.—55 Laurel St., M. E. Henshaw.
SOUTHERN REPRESENTATIVE:
3623 Camp St., New Orleans, La., Chas. Gruneberg.

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MACBETH-EVANS GLASS COMPANY.....462
Pittsburgh, Pa.
BRANCH OFFICES:
Boston, Mass.—30 Oliver St.
Chicago, Ill.—172 West Lake St
Cincinnati, O.—Pickering Bldg.
Cleveland, O.—1900 Euclid Bldg.
Dallas, Tex.—Southwestern Life Bldg
New York, N. Y.—143 Madison Ave.
Philadelphia, Pa.—1613 Chestnut St.
San Francisco, Cal.—Rialto Bldg
St. Louis, Mo.—Laclede Gas Light Bldg.
CANADIAN OFFICE:
Toronto, Ont., Can.—Macbeth-Evans Glass Co., Ltd., 160 Bay St.

MACOMBER & WHYTE ROPE CO.....253
Chicago, Ill.
BRANCH OFFICES:
Pittsburgh, Pa.
Portland, Ore.
AGENCIES:
Atlanta, Ga.—W. E. Austin Machinery Co.
Atlanta, Ga.—Fulton Supply Co.
Bay City, Mich.—Alert Pipe & Supply Co.
Bartlesville, Okla.—Jarecki Manufacturing Co.
Butler, Pa.—Spank & Co.
Bloomington, Ind.—Seward & Co.
Bluefield, W. Va.—Stephen H. Meem & Co.
Baltimore, Md.—John C. Louis.
Cincinnati, O.—J. R. Wood Supply Co.
Chattanooga, Tenn.—Magill Hardware Co.
Columbus, O.—W. W. Williams.
Detroit, Mich.—United Forge & Machine Co.
Denver, Colo.—Advance Machinery & Supply Co
Dayton, O.—M. D. Larkin Supply Co.
El Paso, Tex.—Geo. S. Thompson Co.
Erie, Pa.—Weller Warfel Co.
Grand Rapids, Mich.—M. Braudy & Sons.
Findlay, O.—Ohio Pipe Co.
Helena, Ark.—Helena Hardware Co.
Indianapolis, Ind.—Geo. M. Chandler Co.
Jacksonville, Fla.—A. L. Wright & Co.
Knoxville, Tenn.—W. J. Savage & Co.
Kansas City, Mo.—Western Steel Products Co.
Kittanning, Pa.—Louden & Smith.
Louisville, Ky.—Todd Donigan Iron Co.

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Little Rock, Ark.—C. E. Rosenbaum Machinery Co.
Lansing, Mich.—A. T. Vandervoort.
Minneapolis, Minn.—Hudson & Thurber Co.
Marietta, O.—Producers' Supply & Tool Co.
Milwaukee, Wis.—L. Reebs Co.
Nashville, Tenn.—Atlas Machinery Co.
New Orleans, La.—Whitney Supply Co.
Omaha, Neb.—Hudson & Thurber Co.
Parkersburg, W. Va.—Parkersburg Machine Co.
Pittsburgh, Pa.—Pittsburgh Gage & Supply Co.
Pittsburgh, Pa.—Jarecki Manufacturing Co.
Robinson, Ill.—Jarecki Manufacturing Co.
Roanoke, Va.—H. W. Davant.
Saginaw, Mich.—Saginaw Hardware Co.
St. Joseph, Mo.—Jamieson Machine Co.
St. Cloud, Minn.—St. Cloud Iron Works.
St. Louis, Mo.—H. P. Webb Co.
Sioux Falls, S. D.—The Dakota Iron Store.
Tulsa, Okla.—Jarecki Manufacturing Co.
Waco, Tex.—Herrick Hardware Co.
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MAIN BELTING CO.....100, 101
12th & Carpenter Sts., Phila., Pa.
BRANCH OFFICES:
Birmingham, Ala.—22 S. 20th.
Chicago, Ill.—13-17 N. Jefferson St., J. W. Cullen, Mgr.
New York, N. Y.—309 Broadway, H. J. Roth Mgr.
Pittsburgh, Pa.—33 Terminal Way, W. C. Schreiner, Mgr.
Seattle, Wash.—205 Maritime Bldg., Wm. M. Taylor, Mgr.
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Montreal, Que., Can.—Main Belting Co. of Canada, Ltd., 10 St. Peter St., D. E. Parker, Mgr.

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New York, N. Y.—Wyckoff Pipe & Creosoting Co., 30 E. 42nd St.
Scranton, Pa.—Scranton Supply & Machinery Co.

MILBURN, ALEXANDER, CO., THE.....463
1420-1426 W. Baltimore St., Baltimore, Md.
AGENCIES:
Boston, Mass.—Harold L. Bond Co., 383-391 Atlantic Ave.
New York, N. Y.—Manning, Maxwell & More, Inc., 119 W. 40th St.
Pittsburgh, Pa.—H. Kleinhans Co., Oliver Bldg.
Portland, Ore.—Railway Equipment Co., First & Oak Sts.
CANADIAN AGENCY:
Montreal, Que., Can.—Geo. W. Reed & Co., 37 St. Antoine St.
Agencies in all leading cities.

MILLER SUPPLY CO., THE.....480
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AGENTS:
San Francisco, Cal.—Eccles & Smith Co.
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Butte, Mont.—Western Mining Supply Co.
Buffalo, N. Y.—Root Neal & Co.
Charleston, S. C.—Cameron & Barkley Co.
Chicago, Ill.—Henion & Hubbell, 217 N. Jefferson St.
Denver, Colo.—Mine & Smelter Supply Co.
Detroit, Mich.—Chas. J. Diederich.
Houston, Tex.—H. A. Paine.
Kansas City, Mo.—English Tool & Supply Co.
Los Angeles, Cal.—Harron, Rickard & McCone.
New Orleans, La.—John H. Murphy Co.
Philadelphia, Pa.—J. J. Shannon & Co., 1744 Market St
Pittsburgh, Pa.—Harris Pump & Supply Co.
Portland, Ore.—Zimmerman, Wells-Brown Co
St. Louis, Mo.—N. O. Nelson Mfg. Co.
St. Paul, Minn.—Robinson Cary & Sands Co.
Seattle, Wash.—Hallidie Machinery Co.

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AGENCIES:
Wilkes-Barre, Pa.—Eastern Pennsylvania Supply Co.
Hazleton, Pa.—Jere. Woodring Co.
Chicago, Ill.—R. H. Hyland & Co., 323 Wells St.
Boston, Mass.—New England Hose Co., 516 Atlantic Ave.
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Seattle, Wash.—Contractors Equipment Co., 522 First Ave., So.
San Francisco, Cal.—Geo. M. Kyle, 49 Geary St.
CANADIAN AGENCIES:
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CANADIAN REEPRESENTATIVES:
Montreal, Que., Can.—Babcock & Wilcox, Ltd.

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Knoxville, Tenn.—H. H. Ashmore, Mgr., 407 Empire Bldg.

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Atlanta, Ga.—Geo. E. Watts, 1526 Candler Bldg.
Boston, Mass.—Chas. N. Wood Co., 79 Milk St.
Butte, Mont.—Westinghouse E. & M. Co., Lewishon Bldg.
Chicago, Ill.—Westinghouse E. & M. Co., 39 So. Lasalle St.
Dallas, Tex.—Westinghouse E. & M. Co., 418 Main St.
Denver, Colo.—Westinghouse E. & M. Co., 429 17th St.
Kansas City, Mo.—Westinghouse E. & M. Co., 1012 Baltimore Ave.
Los Angeles, Cal.—Pierson Roeding & Co.
Philadelphia, Pa.—Electric Service Supplies Co., 17th and Cambria Sts.
Pittsburgh, Pa.—Union Electric Co., Terminal Warehouses.
Portland, Ore.—Pierson, Roeding & Co., 709 Spalding Bldg.
St. Louis, Mo.—Westinghouse E. & M. Co., Natl. Bank Commerce Bldg.
Salt Lake City, Utah—Westinghouse E. & M. Co.—212 S. W. Temple St.
San Francisco, Cal.—Pierson, Roeding & Co., New Montgomery Ave.
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Chicago, Ill.—John T. Shay, 427 So. Dearborn St.
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Cleveland, O.—H. W. Conrad, 701 New England Bld.
Dallas, Tex.—Briggs-Weaver Michinery Co.
Dayton, O.—C. M. Kelso, 1063-64 Reibold Bldg.
Detroit, Mich.—H. M. Stark, 1502 Kresge Bldg.
Indianapolis, Ind.—The Shotwell Company, 312 Traction Terminal Bldg.
Jacksonville, Fla.—The Cameron & Barkley Co.
Kansas City, Mo.—Merkle-Himes Machinery Co., 716 Scarritt Bldg.
Lynchburg, Va.—Hawkins-Hamilton Co., Peoples Natl. Bank Bldg.
Memphis, Tenn.—Hoshall, Simmons & Company, 89 So. Front St.
Milwaukee, Wis.—Fred C. Dorner, 402 Wells Bldg.
Minneapolis, Minn.—J. F. Gould, 840 Plymouth Bldg.
New Orleans, La.—C. T. Patterson & Company.
New York, N. Y.—Geo. W. Neff, 2059, 50 Church St.
Omaha, Neb.—Merkle-Hines Machinery Co.—1020 W. O. W. Bldg.
Philadelphia, Pa.—W. E. Herring, 1004 Commonwealth Bldg.
Pittsburgh, Pa.—F. G. Otto, 1405 Oliver Bldg.
Portland, Ore.—Edw. G. Gordon, 55 First St.
San Antonio, Tex.—San Antonio Machine & Supply Co.
San Francisco, Cal.—Kirk W. Eichelberger, 403 Rialto Bldg.
Salt Lake City, Utah—Edw. G. Dewald, Kearns Bldg.
Seattle, Wash.—Hallidie Machine Company, Occidental Ave. & King St.
Spokeane, Wash.—The General Machine Co., First & Stevens Sts.
St. Louis, Mo.—F. C. Schwaner & Co., 401-2 Bank of Commerce Bldg.
Youngstown, O.—E. G. Helander, 110 Parkview Ave.
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Davy, W. Va.—E. L. Hogan, Dist. Mgr.
Huntington, W. Va.—627 Elm St., H. H. Huddleston, Dist. Mgr. for Ky.
Jellico, Tenn.—W. B. Siler, Special Agt. for Tenn. & Southeastern Ky.
Jenkins, Ky.—John M. McCall, Agt.
La Follette, Tenn.—D. P. Stuart, Dist. Mgr.
Logan, W. Va.—Meredith Moore, Dist. Mgr.
Meyersdale, Pa.—Kennedy Price Agt.
Mt. Hope, W. Va.—R. G. Poff, Dist. Mgr.
Prestonsburg, Ky.—W. J. Ward, Agt.
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Cleveland, O.—Schofield Bldg.
New York, N. Y.—38 W. 32nd St.
Philadelphia, Pa.—Real Estate Trust Bldg.
Pittsburgh, Pa.—Oliver Bldg.
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Minneapolis, Minn.—J. K. Hoppin, Iron Exchange Bldg.
New York, N. Y.—W. H. Eulass, 30 Church St.
Pittsburgh, Pa.—E. D. Graff, 2202 Oliver Bldg.
St. Louis, Mo.—A. M. Mueller, 2208 N. Second St.
REPRESENTATIVES:
Detroit, Mich.—F. J. Kaiser, 726 Ford Bldg.
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Pittsburgh, Pa.—W. O. McKamey, P. O. Box, 1413.
AGENCIES:
Bramwell, W. Va.—H. S. Brown.
Charleston, W. Va.—M. P. Pritchard, Virginia St.
Charleston, W. Va.—West Virginia Equipment Co., 903 Kanawha St.
Denver, Colo.—O. H. Davidson Equipment Co., 510 Ideal Bldg.
Minneapolis, Minn.—W. M. Zeigler, 320 Temple Court.
Salt Lake City, Utah—J. W. & D. C. Gates, 503 Dooly Block.
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Denver, Colo.—Mine & Smelter Supply Co.
Huntington, W. Va.—Huntington Supply & Equipment Co.
New York, N. Y.—P. A. Moulton, Room 754 Marbridge Bldg.
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Los Angeles, Cal.—Telephone Electric Equipment Co., 901-2 Union Oil Bldg.
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St. Louis, Mo.—705 Olive St.
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Cincinnati, O.—Randle Machinery Co.
Cleveland, O.—Geo. W. Bach, Rockefelier Bldg.
Columbus, O.—Scioto Valley Supply Co.
Concord, N. H.—Page Belting Co.
Los Angeles, Cal.—Western Heating Co.
New York, N. Y.—A. D. Granger Co., 90 West St.
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Pittsburgh, Pa.—E. W. Bentley, Diamond Bank Bldg.
Portland, Ore.—J. M. Main.
Richmond, Va.—Arthur Scrivenor.
Rochester, N. Y.—Barr & Creelman.
St. Louis, Mo.—F. C. Schwaner & Co., 401 Bank of Commerce Bldg.
Sherman, Tex.—Hardwicke-Etter Co.
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San Francisco, Cal.—515 Mission St., W. B. Wilson, Dist. Sales Mgr.
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Boston, Mass.—Mathias-Hart Co.
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Chicago, Ill.—Henderson-Lee Co., 11-17 S. Desplaines St.
Kansas City, Mo.—Satterlee Electric Co., Hall Bldg.
St. Louis, Mo.—Grayson Railway Supply Co., 405 La Salle Bldg.
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Chicago, Ill.—W. R. Peete Local Mgr., 465 E. Illinois St.
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Chattanooga, Tenn.—R. R. Nixon, Hamilton Natl. Bank Bldg.
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Denver, Colo.—C. L. Dean, 1718 California Ave.
Douglass, Ariz.—L. W. Mendenhall, 1019 Avenue G.
Houston, Tex.—Southern Construction & M .S. Co.
Knoxville, Tenn.—Webster & Co., Holston Bank Bldg.
Los Angeles, Cal.—California Machinery & Equipment Co., 430 S. Broadway.
Louisville, Ky.—E. D. Morton & Co., 516 W. Main St.
Middlesboro, Ky.—Webster & Co.
Milwaukee, Wis.—William Clasmann, Wells Bldg.
Petersburg, Va.—Stockdell-Meyers Co.
Philadelphia, Pa.—Chas. Bond Co., 520 Arch St.
Pittsburgh, Pa.—Dempcy-Degener Co., 14 Wood St.
Salt Lake City, Utah—Utah Engineering & Machinery Co., 15 Evchange Place.
Seattle, Wash.—Brinkley Supply Co., 524 First Ave. S.
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Cleveland, O.—413-415 Huron Road.
Dallas, Tex.—Pacific Ave. & Ervay St.
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Detroit, Mich.—263 Franklin St.
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Kansas City, Mo.—608-610 Wyandotte St.
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Omaha, Neb.—802 Farnam St.
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Butte, Mont.—Montana Electric Co. Bldg., 50-52 East Broadway.
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Charlotte, N. C.—American Bldg., S. Tryon St.
Chicago, Ill.—New York Life Bldg., 39 S. La Salle St.
Cincinnati, O.—Traction Bldg., 5th & Walnut Sts.
Cleveland, O.—Swetland Bldg., 1010 Euclid Ave.
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Detroit, Mich.—Dime Savings Bank Bldg., Fort & Griswold Sts.
El Paso, Tex.—Mills Bldg., Oregon & Mills Sts.
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Houston, Tex.—Tel-Electric Bldg., 602 Preston Ave.
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Joplin, Mo.—BaSom Bldg., 418 Joplin St.
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Milwaukee, Wis.—Merchants and Manufacturers Bank Bldg., 214-220 W. Water St.
Minneapolis, Minn.—Met. Life Insurance Bldg., 106 S. 3rd St.
New Orleans, La.—Maison Blanche Bldg., 921 Cana St.
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New York, N. Y.—30 Church St., George R. Lyman, W. C. Wilson, H. F. Pratt.
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Cleveland Furnace Co., Cleveland, O	100
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Milwaukee Coal & Gas Co., Milwaukee, Wis	160
North Shore Gas Co., Waukegan Falls, Wis	15
Pennsylvania Steel Co., Lebanon, Pa	90
Pennsylvania Steel Co., Steelton, Pa	120
Philadelphia Sub. Gas & Elec. Co., Chester, Pa	40
Semet-Solvay Co., Syracuse, N. Y.	30
Semet-Solvay Co., Wheeling, W. Va.	120
Semet-Solvay Co., Dunbar, Pa.	110
Semet-Solvay Co., Ensley, Ala.	240
Semet-Solvay Co., Tuscaloosa, Ala.	60
Semet-Solvay Co., Detroit, Mich.	140
Total	1576

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Allegheny By-Products Coke Co., Glassport, Pa	120
Camden Coke Co., Camden, N. J	150
Carnegie Steel Co., Farrell, Pa	212
Citizens' Gas Co., Indianapolis, Ind	100
Dominion Iron & Steel Co., Sidney, N. S., Can.,	520
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Michigan Alkali Co., Wyandotte, Mich	30
New England Gas & Coke Co., Everett, Mass	400
Northwestern Iron Co., Mayville, Wis	36
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WANT IN THE MINING
CATALOGUES
WRITE
US

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IF YOU DO NOT FIND WHAT YOU WANT IN THE MINING CATALOGUES WRITE US

List of Coal Mine Inspectors in The United States

Corrected to August 1, 1915.

ALABAMA.

Chief Mine Inspector.
C. H. Nesbitt, 420 Chamber of Commerce Building, Birmingham.

District Mine Inspectors.
W. P. Smith, Tuscaloosa.
David Kelso, Wylam.
T. H. Tinney, Birmingham.
Hugh Lynch, Birmingham.
Thomas Roscoe, Jasper.

ALASKA.

U. S. Territorial Mine Inspectors.
Sumner S. Smith, Juneau.
W. J. Maloney, Asst., Juneau.

ARKANSAS.

Chief Mine Inspector.
Thomas H. Shaw, Midland.

COLORADO.

Commissioner of Mines.
T. R. Henahen, Denver.

State Inspector of Coal Mines.
James Dalrymple, Denver.

Deputy Inspector of Coal Mines.
F. N. Oberding, Louisville.
Henry King, Denver.
Jas. W. Graham, Lafayette.

IDAHO.

State Mine Inspector.
Robert N. Bell, Boise.

ILLINOIS.

State Inspector of Mines.
Ben D. Roberts, Streator.
Thos. H. Devlin, Assumption.
Geo. L. Morgan, Benton.
David Z. Thursh, Farmington.
J. E. Jones, Springfield.
John Garrity, Riverton.
Archibald Frew, Gillespie.
John Kaney, Centralia.
William Hartman, Belleville.
John McClintock, Murphysboro.
J. W. Starks, Springfield.
James S. Reid, Carterville.

Chief Clerk State Mining Board.
J. F. Morris, Springfield.

INDIANA.

Deputy Inspector of Mines.
Michael Scollard, Indianapolis.
Additional Inspectors to be appointed

IOWA.

State Mine Inspectors.
W. E. Holland, Albia.
R. T. Rhys, Ottumwa.
Ed. Sweeney, Des Moines

Secretary to Iowa Mine Inspectors.
L. E. Stamm, Des Moines.

KANSAS.

Chief Mine Inspector.
John Pellegrino, Pittsburg.

Deputy Mine Inspectors.
James Sherwood, Pittsburg.
Charles Paisley, Pittsburg.
Martin Kotzman, Pittsburg.
Fred Green, Pittsburg
Thomas Turvey, Pittsburg.

KENTUCKY.

Chief Inspector of Mines.
C. J. Norwood, Lexington.

Assistant Mine Inspectors.
G. T. Sears, Central City.
H. S. Sizemore, Earlington.
J. W. Reed, Lexington.
R. D. Clere, Ashland.
J. D. Cain, Pineville.

MARYLAND.

State Mine Inspector.
William Walters, Midland.

MICHIGAN.

State Coal Mine Inspector.
Thos. Kanary, St. Charles.

MISSOURI.

Chief Mine Inspector.
George Hill, Bevier.

State Mine Inspectors.
Coal Mines.
Evan Jones, Higbee.
Ben. B. Fisher, Lexington.

MONTANA.

Chief Mine Inspector.
William B. Orem, Helena.

Assistant Mine Inspector.
D. J. McGrath, Butte.

State Mine Inspector.
John Sanderson, Helena.

NEW MEXICO.

State Mine Inspector.
Rees H. Beddow, Gallup.

NORTH DAKOTA.

State Engineer and Ex-Officio Coal Mine Inspector.
J. W. Bliss, Bismark.

OHIO.

Chief Deputy, Division of Mines.
J. M. Roan (Majestic Theatre Bldg.) Columbus.

Assistant Chief Deputy Division of Mines.
J. C. Davies, (Majestic Theatre Bldg.) Columbus.

District Mine Inspectors.
John Burke, Wellston.
Morris Albaugh, Murray.
Andrew Ginnan, Jacksonville.
Elmer Sagle, Roseville.
J. A. Collins, Belle Valley.
Dennis Sullivan, Coshocton.
Evan Lewis, Massillon .
William Werker, Rayland
Hugh Gaffney, Bridgeport.
L. D. Devore, Bellaire, R. D. No. 2.
T. F. Grogan, Hemlock.
R. S. Wheatley, Salineville.

OKLAHOMA.

Chief Mine Inspector.
Ed. Boyle, Oklahoma City.

Assistant Mine Inspectors.
Tom Scott, Coalgate.
W. T. Williams, Krebs.
Frank Haley, Henryetta.

PENNSYLVANIA.

Chie fof Department of Mines.
James E. Roderick, Harrisburg.

Anthracite Inspectors.
State Mine Inspectors.
P. J. Moore, Carbondale.
L. M. Evans, Scranton.
S. J. Phillips, Scranton.
Jenkin T. Reese, Scranton.
Augustus McDade, Rendham.
Hugh McDonald, Pittston.
T. J. Williams, Wilkes-Barre.
S. J. Jennings, Pittston.
D. T. Davis, Wilkes-Barre
Jos. J. Walsh, Nanticoke.
D. J. Roderick, Hazleton.
P. C. Fenton, Mahanoy City.
A. B. Lamb, Shenandoah.
J. A. O'Donnell, Centralia.
B. I. Evans, Mt. Carmel.
P. J. Friel, Shamokin.
Isaac M. Davies, Lansford.
John Curran, Pottsville.
M. J. Brennan, Pottsville.
Chas. J. Price, Lykens.
Benjamin Maxey, Forest City

Bituminous Inspectors
State Mine Inspectors.
Alexander McCanch, Monongahela.
C. B. Ross, Latrobe.
T. K. Adams, Mercer.
Elias Phillips, Dubois.
Isaac G. Roby, Uniontown.
T. D. Williams, Johnstown.
C. P. McGregor, Crafton.
Joseph Knapper, Philipsburg.
P. J. Walsh, Connellsville.
Joseph Williams, Altoona.
D. R. Blower, Scottdale.
Thos. A. Furniss, Punxcutawney.
William Langan, Elizabeth.
David Young, Freeport.
Alexander Monteith, Patton.
W. H. Howarth, Brownsville.
John I. Pratt, 7740 Bennett St., Pittsburgh.
Thomas A. Mather, Tyrone.
James J. Stoker, Irwin.
F. W. Cunningham, Somerset.
C. P. Byrne, Charleroi.
John F. Bell, Dravosburg.
Edward E. Girod, Masontown.
Nicholas Evans, Johnstown.
Thomas S. Lowther, Indiana.
P. J. Callaghan, Bridgeville.
Harry Phythyon, Belle Vernon.
Thomas H. Thompson, Punxsutawney

TENNESSEE.

Chief Mine Inspectors.
R. A. Shiftlett, Nashville.
L. E. Card, Coal Creek.
E. W. Mansfield, Rockwood.

TEXAS.

State Mine Inspector.
Isadore J. Broman, Austin.

UTAH.

State Mine Inspector.
J. E. Pettitt, Salt Lake City.

VIRGINIA.

Commissioner of Labor.
James B. Doharty, Richmond.

State Mine Inspector.
Capt. Richard B. Roane, Richmond.

WASHINGTON.

Chief Mine Inspector.
James Bagley, Seattle.

Deputy Mine Inspector.
Simon Ash, Seattle.

WEST VIRGINIA.

Chief of Dept. of Mines.
Earl A. Henry, Charleston.

District Mine Inspectors.
W. B. Riggleman, Fairmont.
F. E. Parsons, Clarksburg.
L. D. Vaughn, Grafton.
W. B. Plaster, Elkins
R. B. Cobb, Charleston.
Enoch Carver, Charleston.
Eli J. Mason, Montgomery.
John I. Absalom, Montgomery.
L. B. Holliday, Beckley.
Isaac Murray, Bramwell.
Lawson Blenkinsopp, Landgraff.
P. P. Kerr, Williamson.
J. G. Vaughn, Charleston.
S. M. McMahan, Wellsburg.
Clarence N. Orr, Kingwood.

WYOMING.

State Coal Mine Inspectors.
George Blacker, Cumberland.
Frank Overy, Rock Springs.
Thomas Jones, Kemmerer.



DEVELOPMENT AND ENGINEERING SECTION

The following concerns have catalogue descriptions in this section:

Alabran, T. G. & Bro.
Buff & Buff Mfg. Co.
Buffum, F. D.
Cement Gun Construction Co.
Davis Instrument & Mfg. Co.
Dravo Contracting Co.
Elliott, B. K. Co.
Hoffman Brothers.
Hyde, W. H.
Johannessen, J., & Son.
Patterson, Walter F.
Pennsylvania Drilling Co.
Punxsutawney Drilling & Contracting Co.
Randolph-Means Co.
Taylor Instrument Companies.

For additional descriptions of Development and Engineering Companies not appearing in this section, refer to Index of Products in front of book

T. G. ALABRAN & BRO.

225 South Main Street, Punxsutawney, Penn'a.

Diamond Drillers and Contractors

Satisfactory Core of Coal Guaranteed

Products

Diamond Drilling and Prospecting.

Testing for Coal and Other Minerals.

Air Shafts, Etc.

Experience

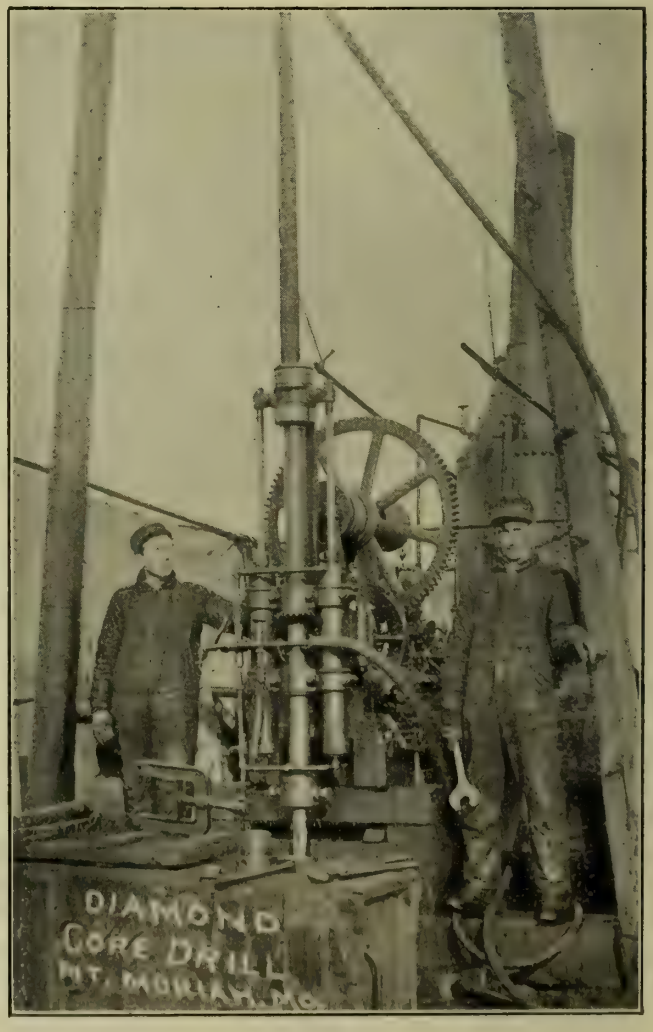
We have been in the diamond drilling and prospecting business since 1897, and have the widest of experience. We have drilled successfully in Pennsylvania, Ohio, West Virginia, Maryland, Kentucky, Virginia, Indiana, Illinois, Missouri and New York, and all our work has proven very satisfactory. This wide experiencce enables us to intelligently quote reasonable prices on drilling in any part of the country.

We can give you best of references, but our best reference is a "Satisfactory Core of Coal."

Equipment

We have a number of machines and equipment sufficient to take care of any conditions that arise, and we can cut a core up to 2¼ inches in diameter. On the opposite side of this page, we show one of our outfits drilling at Mount Moriah, Mo. We give all the work our personal supervision and have good, reliable, experienced men always on the job.

When you are contemplating having any work of this character done, we would be pleased to have you advise us, and we will be more than pleased to furnish what reference you desire and quote on the work you want done.



HOFFMAN BROS.

PUNXSUTAWNEY, PA.

DIAMOND DRILLING CONTRACTORS

"Prospecting Mineral Lands with Diamond Core Drills Removes the Doubt"



Mr. Coal Operator:—

Why expend large sums

For Construction Work,

For Coal Lands,

For Equipment,

without first satisfying yourself "that the investment will pay.

Prospecting mineral lands with Diamond Core Drills removes the doubt.

We produce 2¼ inch cores through all strata and guarantee satisfactory coal cores.



We insure you against possible failure by proving:

Thickness of coal seams;

Quality of the coal;

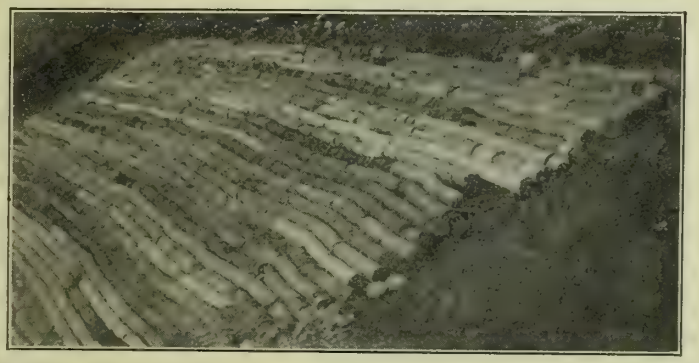
Character of the roof;

Location of basin;

Faults, Rolls, etc.

With the knowledge thus gained you can determine values.

"Forewarned is to be forearmed."



Showing Section of 1456½ Feet of 2¼ Inch Core, Taken From One Hole.

Experience

Our experience in testing Bituminous Coal Lands throughout Pennsylvania, Ohio, West Virginia, Maryland, Illinois, Kentucky and Tennessee covers many years.



Capacity 3,000 Feet.

Equipment

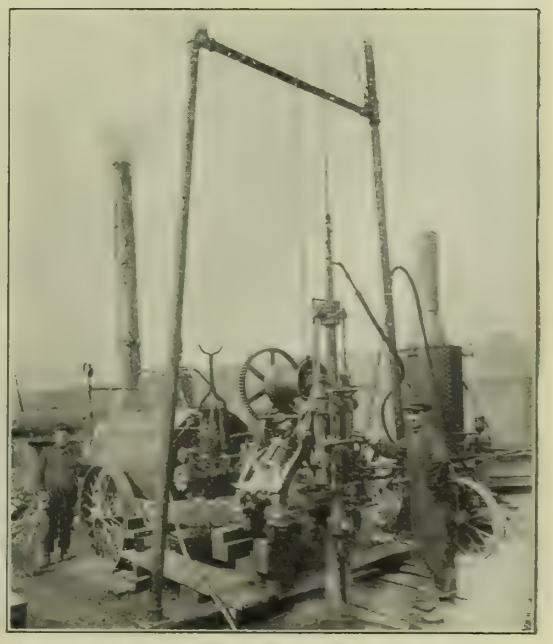
Our equipment for coal testing alone consists of twelve Diamond Core Drill Machines, nine drills with capacity of 1,000 feet, three large drills with 3,000 foot capacity.

Our Organization

A large force of highly experienced, competent and successful drillers.

We are at your service. Our prices are right. Contracts quickly and accurately executed.

Correspondence solicited.

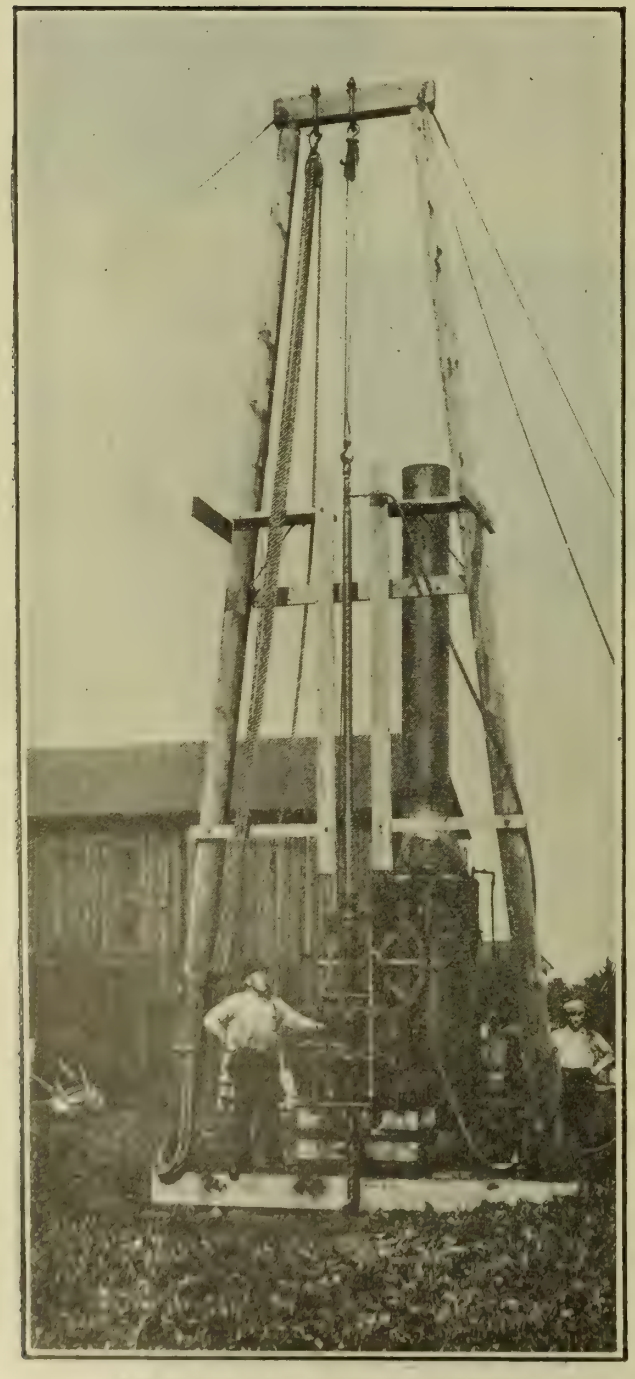


Capacity 3,000 Feet.

J. JOHANNESSEN & SON

PUNXSUTAWNEY, PA.

Diamond Drilling Contractors



One of Our Latest Improved Machines.

Products

Diamond Core Drilling.

Sinking of Shafts and Slopes.

Driving of Drifts and tunnels.

Concrete Work.

Experience

We have been doing diamond drilling and contracting work with a great number of coal mining companies for a number of years. All our work has proven very satisfactory and you can refer to anyone that we have done business with.

Our experience has brought us in contact with peculiar conditions found among mining properties, and we have been able to meet all these conditions satisfactorily. Below you will find a few of the concerns we have done work for in the past.

Quemahoning Coal Co., Somerset, Pa.

Cambria Steel Co., Johnstown, Pa.

Quemahoning Creek Coal Co., Somerset, Pa.

Staufer Bros., Listie, Pa.

Lehigh Coal & Navigation Co., Landsford, Pa.

Equipment

We have several types of equipment, as per illustration shown on this page, and have a sufficient number of machines to take care of any size work.

We are now constructing a new diamond drill, which will be the latest machine made. It will be driven by turbine steam engines, and will be the first and only equipment of this character in the world. It will be more economical to operate. This machine will be able to do considerably more work than any other equipment made, as it will require less time for repairs, will be operated with half of the amount of steam required to operate other drills and in an all around way, will be more efficient than any of the other equipment made.

In conclusion, we wish to ask for the opportunity to submit our plan and service on any work contemplated.

THE PENNSYLVANIA DRILLING CO.

Formerly

The J. A. Brennan Drilling Co.

30 Carson Street, Pittsburgh, Pa. 2623 Whitehall Bldg. New York, N. Y

Drilling Contractors

Products

Diamond Core Drilling.
Hollow Rod Drilling.
Big Holes for Ventilation.
Water Wells, Etc.

Our Specialty

We specialize in Diamond Core Drilling and have all size drills; drills for **inside mine work,** which drill in any direction from straight down to straight up. We also have drills for mountain work, or for drilling holes 3,000 feet in depth.

You Can't Look Into the Earth

although you often want to know what is underneath the surface. By far the most



satisfactory method is using the Diamond Core Drill and getting a core big enough and solid enough for any test. It is the only satisfactory method of testing your coal field. You see the thickness and structure of the coal seam. You see the nature and thickness of the partings, etc., etc.



We Can

Experience

We have taken out **250,000 feet of core** in the last ten years and have hundreds of well satisfied customers from Cuba to British Columbia.

Let us quote you prices on **Core Drilling, Water Wells, Hollow Rod Drilling or Big Holes for Ventilation.**

Punxsutawney Drilling & Contracting Co.

Weber Building, Punxsutawney, Pa.

Hans Olson, President — John A. Fisher, Secretary & Treasurer

Testing mineral lands with the diamond drill is now acknowledged to be the only satisfactory way. In this advanced age of keen competition it would be considered poor business judgment for any individual or corporation to purchase a property supposed to be rich in minerals without being absolutely certain as to whether it does or not. The only way to find out is to have the property tested by the diamond drill. By this method you secure a core of the entire distance drilled. Accurate measurements of all strata passed through are furnished, and a complete core for chemical analysis is the final result.

Testing Coal Land Is Our Business

We are the pioneers in the diamond drilling business in Pennsylvania. We have gone through all phases of the business, and believe we have gleaned a pretty thorough knowledge of how to do the work right in our twenty-five years' experience. SO CONFIDENT ARE WE OF OUR ABILITY THAT WE GUARANTEE SATISFACTION.

Selecting a man to test your mineral lands is just as important as selecting your lawyer or your doctor—you want the best. You cannot afford to take a chance on inexperienced or incompetent men in either case. Our ability is unquestioned and our prices for the work are reasonable. We have plenty of drills and a force of skilled workmen at all times and can take care of your work on short notice. With the best machinery on the market and a force of experienced, reliable workmen, most of whom have been with us a greater part of the twenty-five years we have been testing coal lands, we have an organization that can produce results.

Our best advertisement has been the satisfactory service we have rendered some of the largest concerns in the United States, any of whom you are at liberty to write concerning our reliability. For your information and convenience we mention a few of these as follows:

PENNSYLVANIA

Berwind-White Coal Mining Co.....Philadelphia, Pa.
Rochester & Pittsburgh Coal & Iron Co..Punxsutawney, Pa.
Buffalo & Susquehanna Coal Mining Co.....Dubois, Pa.
Northwestern Mining & Exchange Co.....Dubois, Pa.
Merchants Coal Co.....Pittsburgh, Pa.
Clearfield Bituminous Coal Corporation.....Clearfield, Pa.
Keystone Coal & Coke Co.....Greensburg, Pa.
Pennsy Coal Co.....Franklin, Pa.
E. V. d'Invilliers, Mining Engineer.....Philadelphia, Pa.
J. S. Sillyman & Co., Mining Engineers.....Altoona, Pa.
John F. Torrence.....Connellsville, Pa.
E. W. Eisler.....Butler, Pa.

OHIO

American Sheet & Tinplate Co.....Pittsburgh, Pa.
George M. Jones Co.....Toledo, O.
W. H. Warner & Co.....Cleveland, O.

ILLINOIS

Cleveland, Cincinnati, Chicago & St. Louis Ry..Chicago, Ill.

WEST VIRGINIA

Consolidation Coal Co.....Fairmont, W. Va.
Davis Coal & Coke Co.....Cumberland, Md.
Elkins Coal & Coke Co.....Morgantown, W. Va.
New River & Pocahontas Consolidated Coal Co. Charleston, W. Va.
Faraday Coal & Coke Co.....Gary, W. Va.
Virginia-Pocahontas Coal Co.....Johnson City, Tenn.

KENTUCKY

West Kentucky Coal Co.....Sturgis, Ky.

We would be pleased to submit prices on your next contract for drilling. A telegram, postal card or telephone call will bring our representative to you.

F. D. BUFFUM

SHAFT SINKING CONTRACTOR

Jenkins Arcade, Pittsburgh, Pa

Business.

Sinking Shafts and Slopes and erecting any part of a mine plant including Power Houses, Machinery and Concrete Work in connection with Shaft Sinking.

I make a specialty of this work in its various forms and am executing some of the most difficult contracts in this line.

Erecting Mine Plants

When I have a shaft sinking outfit on the ground I can use it in constructing other parts of the mining plant at a minumum cost. This has proved a saving to a number of customers.

Ask for estimates.

THE DRAVO CONTRACTING CO.

Diamond Bank Building Pittsburgh, Pa.

Engineers and Contractors - Shaft Sinking

Slopes, Tunnels, Complete Mining Plants Pneumatic Caissons, Submarine Construction, Dams, Sea Walls, Bridge Piers, All-Steel Coal Barge Construction

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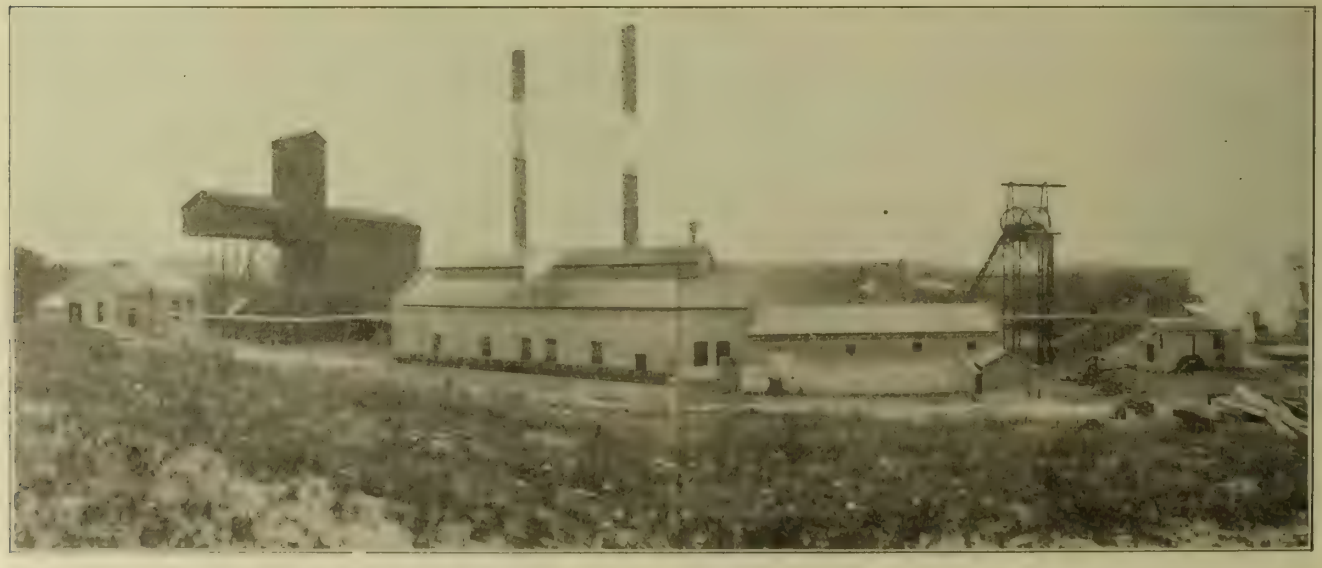
In the last fifteen years we have sunk over 35,000 feet of shafts—nearly 7 miles. This volume of sinking under so many varied conditions has given us the opportunity for the successful development of a process of sealing water-bearing rock strata by cementation, enabling us now to guarantee a practically dry shaft in even the wettest country.

Our biggest work in the shaft line was the sinking and water-sealing of 26 shafts on the new 70-mile Catskill Aqueduct for New York City—over 50 per cent. of the total on the entire waterway—their depth ranging from 200 feet to 700 feet. Our work has carried us to every coal mining State in the East, and, while the most of our sinking has been for the older and larger mining interests, such as the Frick Coke Company, the Berwind-White Coal Mining Company, the Pittsburgh Coal Company, and their various allied interests, for whom we have sunk 26 shafts, we have put down over 60 openings for companies new in their fields.

While our shaft-sinking department handles probably only one-third of our annual business, we have under contract at the present writing more footage than that of all the other shaft contractors combined.

Our large repair and structural shops on our 20-acre property on Neville Island, near Pittsburgh, enable us to keep our plant in first class condition. A store of dry sand and gravel kept constantly to a 70,000-ton pile by one of our own sand dredges, a quantity of lumber and timber ranging between three hundred and five hundred thousand feet, and a well-balanced stock of pipe and fittings and small tools, have made our yard a valuable means for gaining not only a quick start, but a sure and prompt source of supply.

These few facts are presumably some of the reasons why we have done the big bulk of the recent shaft sinking in the East.



Berry No. 3 Mine, Ford Collieries Co., Curtisville, Pa. Shafts, Foundations and Mine Buildings Constructed by us, 1914.

W. H. HYDE

Contractor

P. O. Box 791, Pittsburgh, Pa. 1305 Delafield St., N. W., Washington, D. C.

Products

Shaft Sinking, Tunneling, Rock Excavation, Concrete and Construction inside Coal Mines.

Timber-lined Shafts Remodeled and Lined with Concrete.



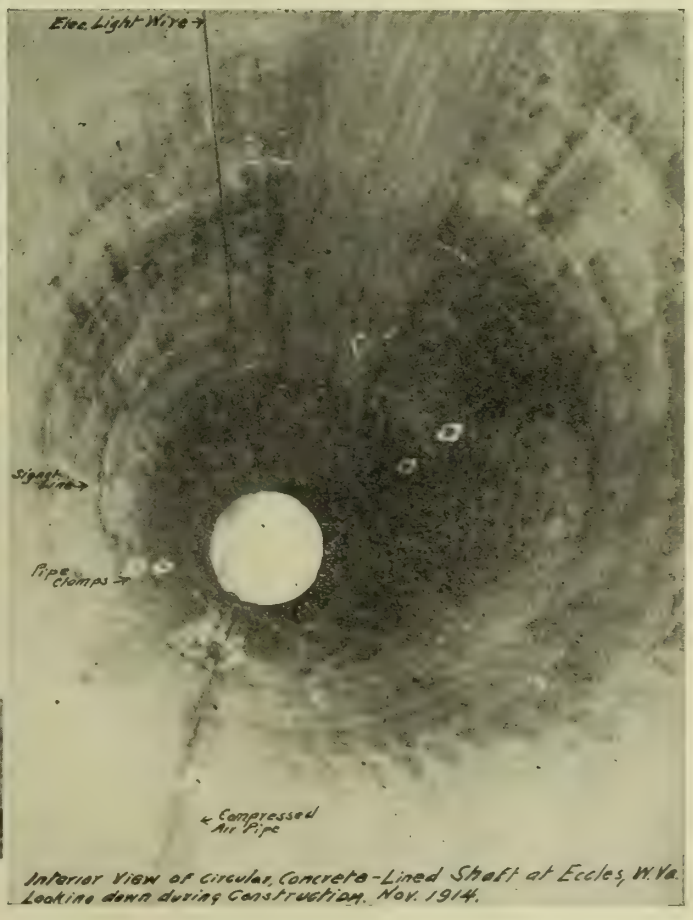
One of Seven Similar Pump Rooms Inside Shaft Mines in W. Va.



Shaft Sinkink in Alberta, Canada.



"Wet" Shaft in Pennsylvania During Sinking.



Interior View of Circular, Concrete-Lined Shaft at Eccles, W. Va. Looking down during Construction. Nov. 1914.

WALTER F. PATTERSON
WALTER F. PATTERSON, JR.

Offices:
337 Oliver Bldg., Pittsburgh, Pa., P. O. Box 786
Waverly, Ohio, P. O. Box 179

General Contractors

Shaft Sinking Tunneling, Heavy Rock Work, Bridge Work and All Kinds of Concrete Work

Products

We specialize on Shaft Sinking; Shafts Timber or Concrete Lined; Rectangular, Square, Oval or Round. Tunnels and Slopes, Single or Double Track, Brick, Concrete or Timber Lined.

Reference

SOME OF THE SHAFTS AND SLOPES WE HAVE SUNK.

Name of Company	Works	Size	Depth, Ft.
PENNSYLVANIA			
Buffalo-Susquehanna Co.	Big Run, No. 1	12 x24	280
Buffalo-Susquehanna Co.	Big Run No. 2	12 x26	280
Hecla Coal & Coke Co.	Hecla, No. 3	12 x24	300
Hecla Coal & Coke Co.	Hecla, No. 3, Air	12 x18	300
Ellsworth Collieries Co.	Ellsworth, No. 1	12 x24	271
Ellsworth Collieries Co.	Ellsworth, No. 2	12 x24	292
Ellsworth Collieries Co.	Ellsworth, No. 3	12 x24	405
Ellsworth Collieries Co.	Ellsworth, No. 4	12 x24	426
Ellsworth Collieries Co.	Ellsworth, No. 5	14 x31	256
H. C. Frick Coke Co.	Filbert, No. 1	14 x28	565
H. C. Frick Coke Co.	Filbert, No. 2	15 x31	592
H. C. Frick Coke Co.	Redstone, Air	14 x36	380
Henrietta Coal Co.	Dunlo, Air	13 x17	123
Penn'a. Coal & Coke Co.	Summerhill, Air	10 x12	405
Pittsburgh-Buffalo Co.	Rachel	22 x33	485
Pittsburgh-Buffalo Co.	Marianna	22 x33	485
Pittsburgh-Buffalo Co.	Agnes	12 x24	480
Portage Coal Mining Co.	Portage, No 1	13 x27	380
Rices Landing Coal & Coke Co.	Rices Landing, No. 1	12 x24	181
Rices Landing Coal & Coke Co.	Rices Landing, No. 2	12 x18	189
Sonman Shaft Coal Co.	Sonman, Slope	9 x12	550
Taylor Coal & Coke Co.	Searights, No. 1	12 x27	280
Taylor Coal & Coke Co.	Searights, Slope	8 x16	825
Union Connellsville Coal Co.	Simpson, No. 1	12 x24	200
Union Connellsville Coal Co.	Simpson, No. 2	12 x24	200
Rochester & Pittsburgh Coal & I. Co.	Eleanora, No. 1	12 x28	350
Rochester & Pittsburgh Coal & I. Co.	Eleanora, No. 2	12 x20	350
Westmoreland Coal Co.	Rillton, No. 1	12 x27	350
Westmoreland Coal Co.	Rillton No. 2	12 x27	350
WEST VIRGINIA			
Carter Coal Co.	Coalwood, No. 1	15 x29	610
Carter Coal Co.	Coalwood, No. 2	14½ x23	610
Davis Coal & Coke Co.	Thomas, No. 1	12 x26	182
Davis Coal & Coke Co.	Thomas, No. 2	10 x18	178
Lake Superior Coal Co.	Dixo-Poca, No. 1	14 x20	65
Lake Superior Coal Co.	Dixo-Poca, No. 2	14 x14	62
Midland Coal & Coke Co.	Philippi, No. 1	12 x24	125
Midland Coal & Coke Co.	Philippi, No. 2	12 x24	125
New River Collieries Co.	Eccles, No. 1	12 x32	495
New River Collieries Co.	Eccles, No. 2	12 x32	525
New River Collieries Co.	Eccles, No. 3	12 x24	488
New River Collieries Co.	Eccles, No. 4	12 x24	250
Standard-Pocahontas Coal Co.	Welch, No. 1	13 x26	354½
Standard-Pocahontas Coal Co.	Welch, No. 2	12 x16	373½
E. E. White Coal Co.	Glen White, No. 1	12 x32	325
E. E. White Coal Co.	Glen White, No. 2	12 x32	325
Houston Collieries Co.	Carswell, No. 1	16 x24	315
Houston Collieries Co.	Carswell, No. 2	16 x38	319
Houston Collieries Co.	Carswell, No. 3	16 x24	253
KENTUCKY			
West Ky. Coal Co.	Clay, No. 1	12 x26	281
West Ky. Coal Co.	Clay, No. 2	12 x26	281
OHIO			
Provident Coal & Coke Co.	Provident, No. 1	12 x28	125
Provident Coal & Coke Co.	Provident, No. 2	12 x20	125
INDIANA			
Bunsen Coal Co.	Clinton, No. 1	23 x13	151
Bunsen Coal Co.	Clinton, No. 2	23 x13	253
Bunsen Coal Co.	Clinton, No. 3	32 x12	277
CANADA			
Acadia Coal Company	Allan, No. 1	12 x24	1505
Acadia Coal Company	Allan, No. 2	12 x24	1016
Dominion Coal Company	Reserve, No. 5	18 x22	200
Dominion Coal Company	International, No. 8	8 x12	369
Londonderry I. & M. Co.	Torbrook, No. 1	10 x30	180
Londonderry I. & M. Co.	Torbrook, No. 2	10 x30	180

RAILROAD TUNNELS

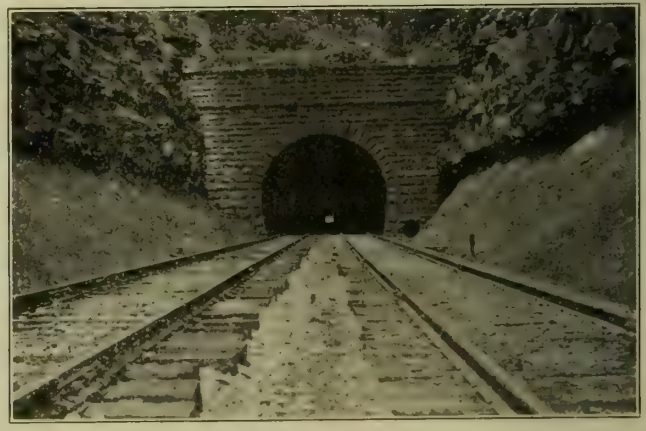
Gould	3,300 Ft.	Long.... Gould, Ohio	"Panhandle"
Laurel Hill	5,200 Ft.	Long.... Somerset, Pa.	South Penn.
Tuscarawas	1,100 Ft.	Long.... Mineral City, O.	C. & P. R. R
Patton	1,200 Ft.	Long.... English, Ind.	Southern
Hog Run	800 Ft.	Long.... Turners, Ky.	L. & N.
Log	1,200 Ft.	Long.... Elliston, Ky.	L. & N.
Cumberland Gap	2,700 Ft.	Long.... Cumberland Gap, Tenn.	L. & N.

RAILROAD BRIDGES

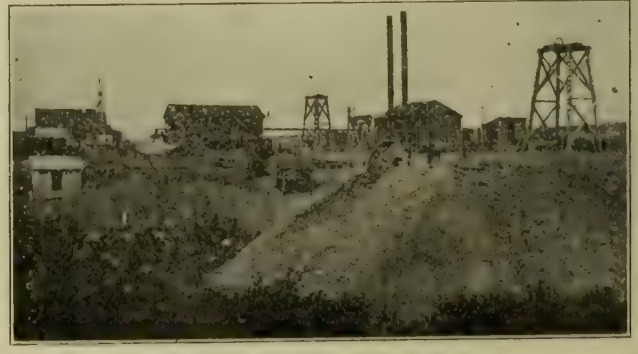
Raccoon Arch	"Panhandle"	Raccoon Creek
Kenova	Norfolk & Western	Ohio River
Big Sandy	Chesapeake & Ohio	Big Sandy River
Cincinnati	Louisville & Nashville	Ohio River
Cincinnati	8th Avenue Viaduct	



Vetilating Shaft, Bunsen Coal Co. Universal Plant, Clinton, Ind.



No. 5 Tunnel at Goulds, O., P. C. C. & St. L. R. R.



Allan Shaft of Acadia Coal Co., Stellarton, N. S. Canada. 1505 Ft. Deep.

CEMENT-GUN CONSTRUCTION CO

914 So Michigan Ave, Chicago, Illinios

Fire Proofing Mine Shafts With Gunite

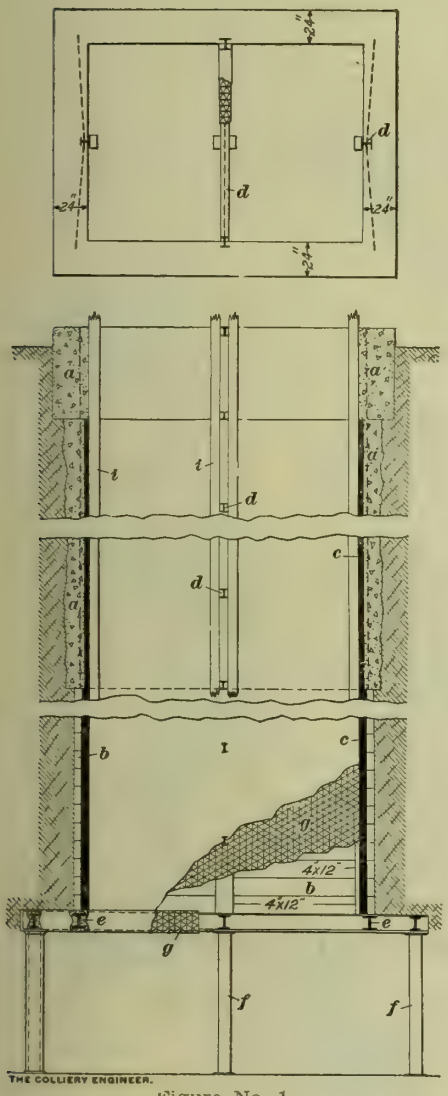


Figure No. 1.

Gunite is a mixture of good, sharp sand and Portland cement mixed dry, shot by means of the Cement-Gun with an air pressure of about 35 pounds per square inch, the water being added in the nozzle at the moment the mixture emerges. It is fire and waterproof. It can be applied to old mines as well as new and the work can be done with very little interruption of hoisting.

Fig. 1 shows a shaft in which a poured concrete collar (a) is used down to the rock. From the rock to the bottom the ordinary skin lining (b) of 4″ x 12″ plank is used. This wood lining which may be placed flat instead of on edge if pressure demands it is covered with a 2″ layer of reinforced Gunite applied with the Cement-Gun. By putting in suitable bleeders to relieve hydrostatic pressure a shaft may be made dry and fireproof.

Fig. 2 shows a method of making a partition between hoisting and air compartments. The H beam buntons (d) are encased with Gunite. Wire cloth (g) is fastened to 1″ boards (h) and a 1″ layer of Gunite is shot through the mesh, the boards removed, and replaced with another 1″ layer of Gunite, thus making a 2″ reinforced wall of Gunite, the opening (d) of the bunton also being closed.

Fig. 4 shows a 3 compartment iron ore shaft in process of fireproofing. The steel H beam sets are wrapped with wire cloth as shown, then encased in Gunite. The wood lagging is covered with wire cloth and then shot with a 2″ layer of Gunite.

(a) shows the original surface of the wood lagging, (b) shows the wire cloth in place ready to receive the Gunite, (c) shows the work as completed.

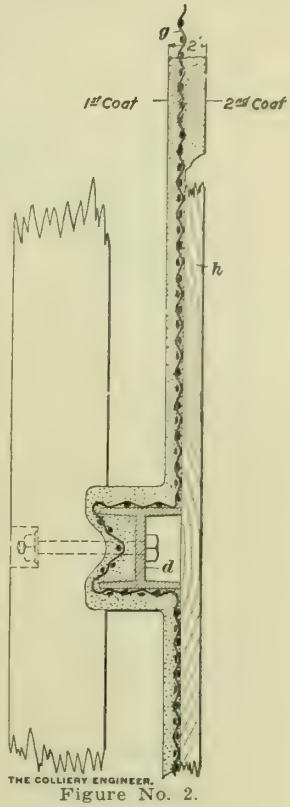


Figure No. 2.

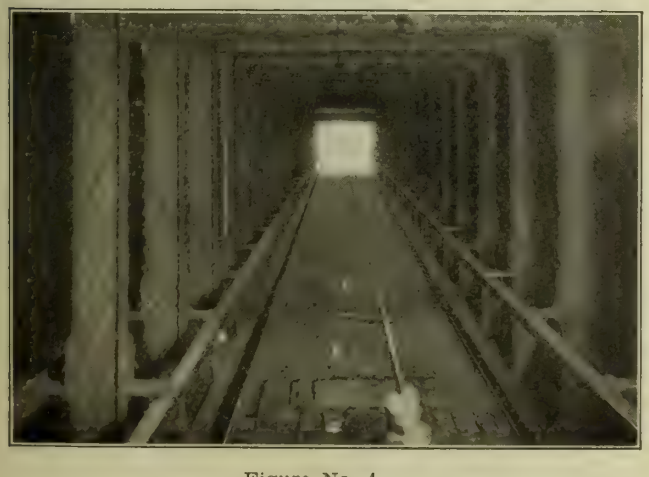


Figure No. 4.
Looking Up Shaft Towards Light.

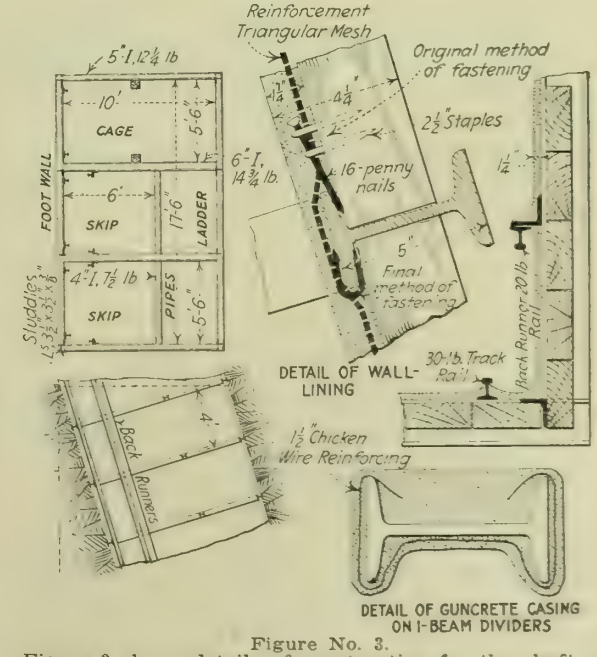


Figure No. 3.
Figure 3 shows details of construction for the shaft shown in Fig. 4.

BUFF & BUFF MANUFACTURING CO.

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NEW YORK OFFICE
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Manufacturers of Surveying Instruments

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—the one thing the Engineer **must** have, is insured by the Buff experience of fifty years of successful Instrument-Making.

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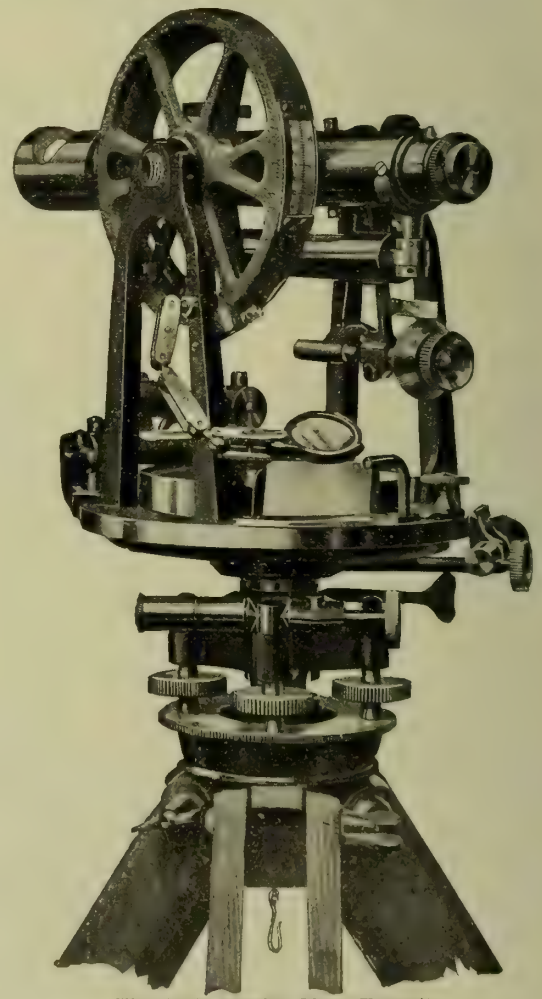
Please investigate the Buff before you purchase!

References

This company are Instrument Makers to the United States Government, many departments; N. Y. C. R. R.; N. Y., N. H. & H. R. R.; New York Water Board; Public Servicce Commission, New York City; Board of Public Works, . .ew York City; Standard Oil Co., Guggenheim and Rothschild interests, J. G. White Co., and numerous other engineering organizations.

The Pennsylvania R. R. used "Buff" instruments in large numbers in both their North River and East River Tunnels. The Subway Commission of New York are now using 150 "Buff" instruments.

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Mining and Scientific Instruments

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Made in 3″, 4″ and 5″ sizes.

Our Anemometers are made by the latest American machine precision methods. The object of the design throughout has been to eliminate all points that have hitherto made these instruments uncertain. All the parts are made to positive standards.



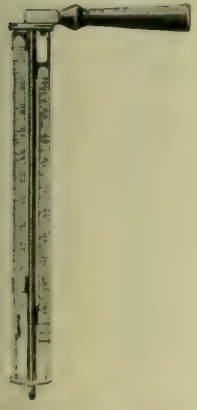


These Anemometers are exceedingly sensitive at low speeds and will stand without injury or disarrangement, velocities up to 2,000 ft. per minute.

Special high velocity instruments in any of the above patterns or readings with four vanes, that will take speeds from 1,000 ft. to 10,000 ft. per minute, same prices.



The twisted vane arms, always a source of unreliability on account of their everpresent tendency to change the calibration, have been abandoned and straight tubular spokes seccurely fastened in the adjusting hub have taken their place.



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For taking rapid and correct observations of atmospheric moisture.

Etched graduations on glass of extra strong thermometer tubes, which are protected by rod standards.

Dust proof, handy pocket tube carrying case.

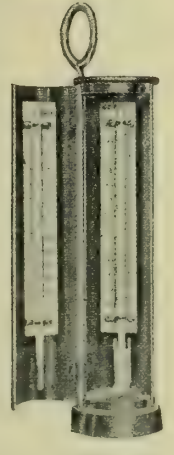
Lengths, 8″ or 10″. Designed for mining and other use.



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Simplified Mine U draft, adjustable sliding scale, nozzle threaded for connections, easy to fill at cap. These are strong and inexpensive guages.

Different sizes and many styles supplied.



Pocket Hygrometer

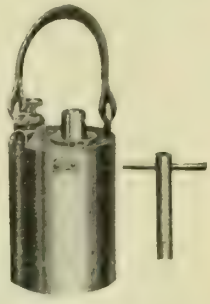
In metal cylindrical closing case.

Thermometer tubes magnify and the scales are mounted on springs to lessen danger of breakage.

Humidity table with each instrument.

Blasting Magneto With Handle

Small but powerful, all parts are well protected and dust proof, constructed to stand years of severe usage. Diameter of case, 3 inches. Made in 4 and 5 lb. sizes.



The Vest Pocket Blasting Battery— Patent pending.

Pocket size—Weight two pounds. No key handle required.



Enormous speed attained by pulling the cord around spool which is directly attached to the Armature. The current is generated from permanent magnets.

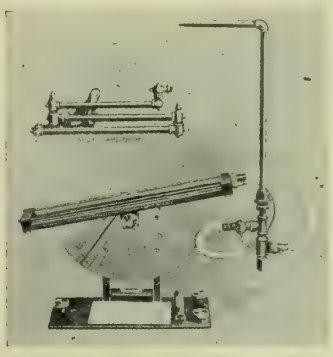
There are no gear movements to get out of order.

Greater efficiency, less cost.

This magneto will fire many shots at once.

Pitot Tube and Manometer

For Blower and Fan Testing, etc. The Pitot Tube is arranged for velocities in relation to static pressures or it may be used separately, the orifice for the static pressures are small and do not admit velocities.



The Pitot tube when inserted in draft pipe may be made quite tight by a sliding threaded collar.

Bracket support supplied in any specified form for Pitot tests.

The inclination adjustment to the scale of the Manometer reads direct velocity feet per minute from one to ten inches of Water-Guage, and is subdivided to one hundredth of an inch by sliding scale.

Calculation tables and formula for computing low velocities and atmospheric variations are attached to the Manometer.

Baltimore Sighting Compass

Weight complete with Tripod about 10 lbs.



6″ Graduated horizontal circle reads to half degrees.

Vertical circle reads to ½ degrees.

3½″ Trough compass needle for locating points.

Sighting Tube is without lenses, but is equipped with adjustable cross hairs and allows excellent vision.

The horizontal to vertical arrangement for sighting is one of the most important features.

Tripod head shifts and has leveling screws.

Suitable for underground Mining practice, etc.

Circulars on application.

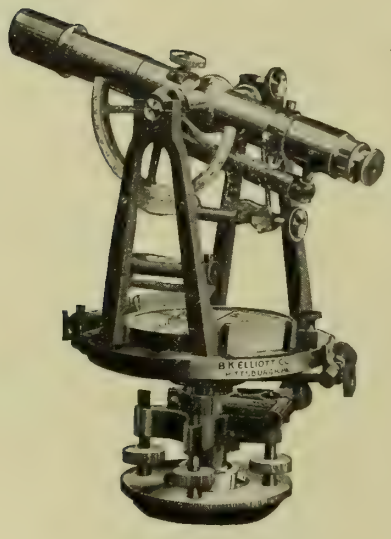
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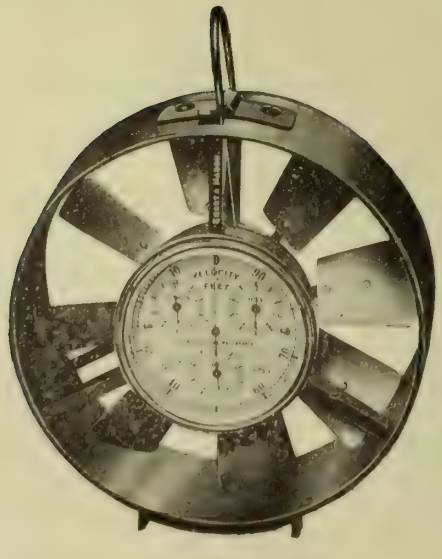


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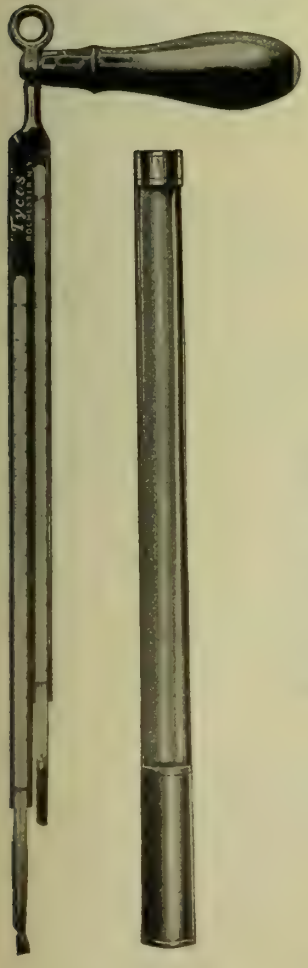
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Jewelled bearings.
Zero setting device.
Untarnishable Silver metal dial.
Non-corrosive movement.
Leather carrying case.
Rated 100 to 3000 lineal feet per minute.
Guaranteed in temperatures up to 300° Fahrenheit.



Used by U. S. Dept. of Agriculture, U. S. Bureau of Mines, U. S. Naval Academy, etc.



Tycos Hygrometers

One of our most popular patterns for Mine use is the Hygrometer illustrated. The handle at top enables operator to swing freely through the air to ensure perfect circulation and evaporation at the bulbs. Standard seasoned tubes with etched scales and protecting copper sheath.

Description of other styles on application.

The Short and Mason Altitude Barometer

Dial diameters 1¾ and 2½ inches.

Compensated and pivotted movements.

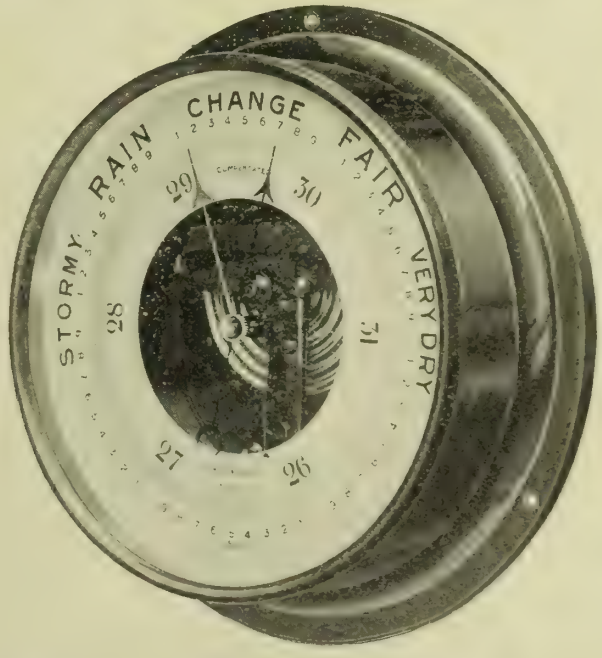
Valuable in determining elevations quickly and accurately.

Made to show altitudes from 3,000 to 16,000 feet.

Used by U. S. Weather Bureau, U. S. Forest Service, U. S. Geological Survey, Bureau of Mines, Coast and Geodetic Survey, Bureau of Plant Industry, U. S. Signal Corps, etc.



The Short and Mason Compensated Barometer



Mercurial barometers have not been found very satisfactory for Mine use, as the mercury needs many corrections before a standard reading can be obtained. Besides this it corrodes and collects much dust and dirt which creates great sluggishness in the instrument.

The Short and Mason Compensated barometer is guaranteed for accuracy, stability and construction. The mechanisms are the same as those supplied to the U. S. Weather Bureau, U. S. Navy and many large coal operators.

Supplied in all styles for use in all altitudes.

Write for Catalogues or Illustrated Booklets on individual instruments.

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RANDOLPH-MEANS COMPANY

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Consulting Electrical Engineers

There may be several ways home, but there is only one shortest way. There may be several ways to do a thing, but there is only one best way. This evident truth applies to nothing more directly and more vitally than to the business of mining coal.

It is possible to spend $100,000 in opening and equipping a mine to produce 1,000 tons a day; or it is possible to invest double this amount without adding materially to the daily output capacity. The entire difference has to do with the wisdom exercised in the purchase of the plant equipment, it being understood that physical conditions in the two cases are the same.

This is the age of the specialist, which fact applies to everyone in every industry, from office boy to president. A man can hardly expect to master all the intricacies of finance, or to understand in minute detail the commercial phases of a great business, and yet be entirely familiar with the practical operation of a plant, the successful working of which depends wholly on engineering skill.

Innumerable failures in coal mining have resulted from defective initial plans. Oftentimes men who are able executives and efficient in their own line of endeavor have met with great trouble through their failure to recognize that the engineering and the executive, or business side of mining, are totally different. Success can only come from a full recognition that expert advice, based on long experience in the operating end, is essential to safety and efficiency in coal production.

There is but one sane method to follow in purchasing mine equipment, and that is to prepare careful plans and specifications to cover the exact article, or articles, wanted. And this is but half the job; the other half is to see that the equipment furnished is precisely what was ordered. Far from being displeased, the manufacturer of mining equipment will be glad to have definite facts, or data, to use in building the machine that is wanted. The mine manager who simply sends out a letter, stating, in a general way, his requirements, and then asking for plans and estimates, is following a line of action that is unworthy and unsatisfactory.

The average business man knows more about commercial law than he does about electricity, yet he would not consider consummating any deal or contract of any importance without the services of a lawyer. The average mine operator knows more about civil engineering than he does about electrical engineering, yet he employs a civil or mining engineer to make plans and maps of his mine.

One certain result following the submission of indefinite equipment requirements to a manufacturer is the call of a salesman; in fact, if several machinery people have been communicated with, the outcome will be a number of salesmen, each presenting to the mining company strong reasons for the purchase of their particular machine. When a large percentage of the bids received are from high-grade manufacturers it often becomes a difficult matter for the mining company to reach a decision which ultimately leads to the best economy. In many cases an apparently prudent decision proves to be the direct converse when the machine is placed in operation, whereupon the mining company is dissatisfied and the manufacturer severely criticised.

The only solution of the entire matter is effective co-operation between the mining company, through properly employed engineering skill, and the equipment manufacturers. The latter are prepared in most cases to build exactly what is wanted, if the would-be purchaser will state exactly and in detail just what is desired.



TIPPLE SECTION

Engineering Data

Inquiry data for Perforated Metal.
Inquiry data for Crushers.
Inquiry data for Scales.
Comparative Gauges Steel Sheets and Plates.
Capacity and Speed Chart of Belt Conveyors.
Capacity and Speed Chart of Bucket Elevators
Capacity of Spiral or Screw Conveyors.
Horse Power of Driving Chains.
Digest of What Constitutes a Modern Anthracite Breaker.
Horse Power Chart of Belt Conveyors.

The following manufacturers have catalogue descriptions in this section:

Allen & Garcia Co.
Anthracite Separator Co.
Ayres, W. S.
Buffalo Scale Co.
Christy Box Car Loader Co.
Cross Engineering Co.
Fairbanks, Morse & Co.
Fairmont Mining Machinery Co.
Farris Bridge Co.
General Electric Co.
Goodyear Tire & Rubber Co.
Hendricks Mfg. Co.
Heyl & Patterson, Inc.
Jeffrey Mfg. Co.
Kanawha Mine Car Co.
Link-Belt Co.
Main Belting Co.
Manierre Engineering & Machinery Co.
Mineral Ridge Mfg. Co.
Montgomery Coal Washing & Mfg. Co.
Ottumwa Box Car Loader Co.
Pennsylvania Crusher Co.
Phillips Mine & Mill Supply Co.
Pittsburgh Coal Washer Co.
Roberts & Schaefer Co.
Robins Conveying Belt Co.
Scottdale Mch. & Mfg. Co.
Standard Scale & Supply Co.
Stephens-Adamson Mfg. Co.
Streeter-Amet Weighing & Recording Co.
Tamaqua Mfg. Co.
Webster Mfg. Co.
Westinghouse Elec. & Mfg. Co.
Wilkins, W. G., Co.
Williams Patent Crusher & Pulverizer Co.
Wilmot Engineering Co.
Winslow Government Standard Scale Works.

For additional descriptions of Tipple Equipment, not appearing in this section, refer to Index of Products in front of book.

Inquiry Data for Perforated Metal.

Mention the number of sheets and the kind of metal desired.

Also the size of sheets—both length and width—in inches.

If an irregular size is wanted, send a rough sketch showing shape of sheets, and on each side note dimensions.

Either send a sample, showing the exact thickness of the metal wanted, or note same by United States Standard, Brown & Sharpe's, (American) or Birmingham (English) standard gauges, of which tables are appended.

If any blanks or plain margins are wanted, mention this, and note plainly on what part of the sheet they should be.

Mention the shape and size of the perforations desired. If slotted holes, state which way of the sheet of metal you wish the perforations to run.

It is always advisable to send a rough sketch, showing the size and the shape of the sheets, the size and shape of the perforations, and which way of the sheet they run—unless they are round or square.

If designed for cylinder screens, state whether butt or lap joints are required and whether the inside or outside diameter of the screen is given.

COMPARISON OF GAUGES FOR

STEEL SHEETS AND PLATES

APPROXIMATE THICKNESS IN INCHES, AND WEIGHT PER SQUARE FOOT IN POUNDS

U. S. STANDARD GAUGE				BIRMINGHAM GAUGE		AMERICAN GAUGE (B. & S.)	
No. of Gauge	Fractions	Decimals	Weight	Decimals	Weight	Decimals	Weight
000	3-8	.375	15.30	.425	17.28	.409	16.71
00	11-32	.343	14.025	.38	15.45	.364	14.88
0	5-16	.312	12.75	.34	13.82	.324	13.26
1	9-32	.281	11.475	.30	12.20	.289	11.80
2	17-64	.265	10.8375	.284	11.55	.257	10.51
3	1-4	.25	10.2	.259	10.53	.229	9.36
4	15-64	.234	9.5625	.238	9.68	.204	8.34
5	7-32	.218	8.925	.22	8.95	.181	7.42
6	13-64	.203	8.2875	.203	8.25	.162	6.61
7	3-16	.187	7.65	.18	7.32	.144	5.89
8	11-64	.171	7.0125	.165	6.71	.128	5.24
9	5-32	.156	6.375	.148	6.02	.114	4.67
10	9-64	.140	5.7375	.134	5.45	.101	4.16
11	1-8	.125	5.1	.12	4.88	.09	3.70
12	7-64	.109	4.4625	.109	4.43	.08	3.30
13	3-32	.093	3.825	.095	3.86	.072	2.94
14	5-64	.078	3.1875	.083	3.37	.064	2.62
15	9-128	.070	2.86875	.072	2.93	.057	2.33
16	1-16	.062	2.55	.065	2.64	.05	2.07
17	9-160	.056	2.295	.058	2.36	.045	1.85
18	1-20	.05	2.04	.049	1.99	.04	1.64
19	7-160	.043	1.785	.042	1.71	.035	1.46
20	3-80	.037	1.53	.035	1.42	.032	1.31
21	11-320	.034	1.4025	.032	1.30	.028	1.16
22	1-32	.031	1.275	.028	1.14	.025	1.03
23	9-320	.028	1.1475	.025	1.02	.022	.922
24	1-40	.025	1.02	.022	.895	.020	.82
25	7-320	.021	.8925	.02	.813	.017	.73
26	3-160	.018	.765	.018	.732	.015	.649
27	11-640	.017	.70125	.016	.651	.014	.579
28	1-64	.015	.6375	.014	.569	.012	.514
29	9-640	.014	.57375	.013	.....	.011	.461
30	1-80	.012	.51	.012	.....	.01	.408

¶ Sheet mills roll steel sheets to U. S. Standard gauge unless otherwise ordered. Plate mills usually roll heavy plates 3-16 and heavier, and light plates No. 8 to No. 12 to Birmingham gauge.

¶ In figuring weights of Steel Plates add to above the allowances for over-weight, adopted by Association American Steel manufacturers.

¶ Brass is rolled to thickness by Brown & Sharpe's American Gauge.

¶ Copper is rolled to thickness by Stubs' or Birmingham Gauge.

Courtesy of Hendrick Mfg. Co.

Inquiry Blank for Crushers.

What material do you wish to crush? .....

What is the size of the material before crushing?... .....

If Coal, from what seam does it come? .....

If Coal, is it R. O. M. or sized? .....

What size finished product is wanted?.....

What capacity, in tons per hour, do you wish to handle? .....

Is the material damp or dry? .....

What percentage of moisture does it contain? .....

For what purpose is the finished product wanted?.. .....

Inquiry Data for Scales.

Style of Scale:
- Railroad Track .....
- Wagon .....
- Hopper .....
- Tipple .....
- Portable .....

Style of Beam:
- Single with Weights.....
- Double with Weights .....
- Tripple with Weights .....
- Compound .....
- Recording .....

Distance from middle of edge of platform to beam rod .....

Capacity:
- Total—Dead and Live Load .....
- Dead Rail .....

Platform:
- Length .....
- Width .....

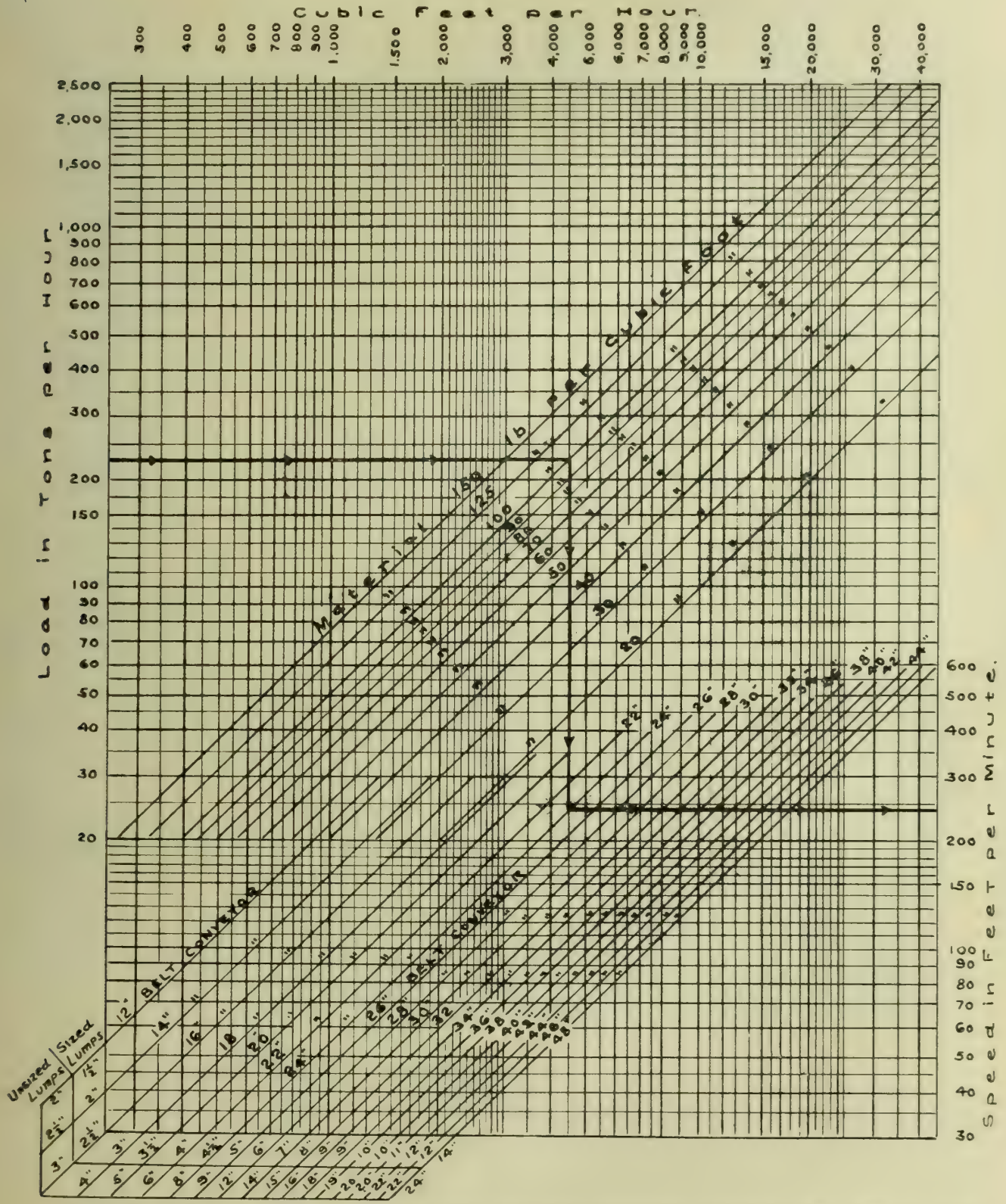
Framing:
- Timber .....
- Steel .....

Foundation:
- Stone .....
- Concrete .....

Character of soil where scale will be erected..... .....

Number of feet of straight track where scale will be located .....

Capacity and Speed Chart of Belt Conveyors

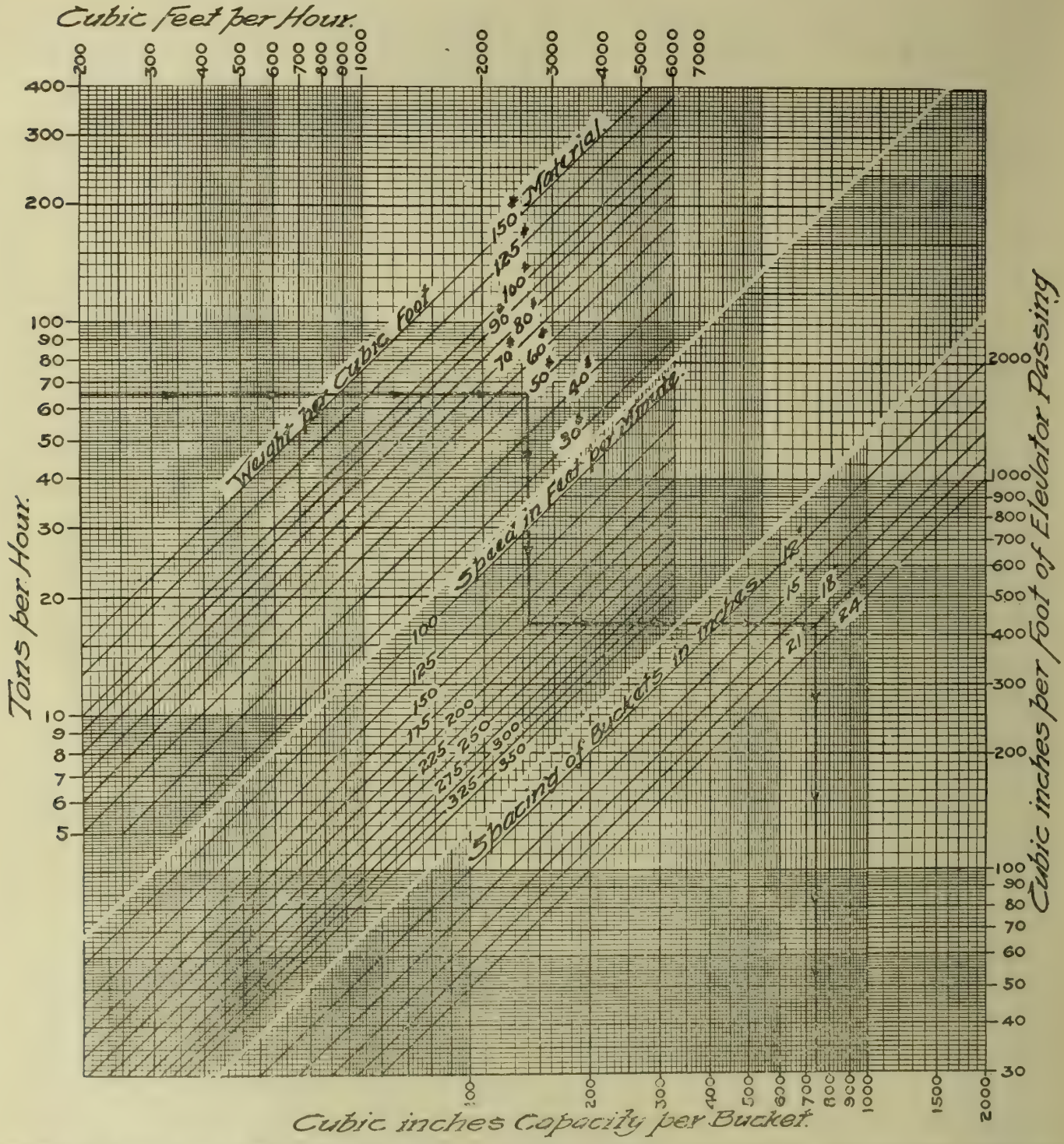


TO FIND THE WIDTH AND SPEED OF BELT TO MOVE DESIGNED TONNAGE OF GIVEN SIZE OR WEIGHT OF ORE, FOLLOW HORIZONTAL LINE OF THE GIVEN TONNAGE TO INTERSECTION WITH ONE OF THE UPPER SET OF DIAGONALS, THEN FOLLOW THE VERTICAL DOWNWARD TO INTERSECTION OF SECOND SET OF DIAGONALS CORRESPONDING TO ANY DESIRED WIDTH OF BELT, THEN FOLLOW OUT HORIZONTALLY TO THE SPEED SCALE, WHICH GIVES SPEED FOR THE BELT.

Courtesy Robins Conveying Belt Co.

Capacity and Speed Chart of Bucket Elevators

Courtesy Robins Conveying Belt Co.



To find the proper size of a Bucket Elevator for a given tonnage or volume of material per hour and given weight per cubic foot:

Enter chart at left with tons per hour and follow across to diagonal line showing weight per cubic foot, thence down to diagonal line representing the desired speed of elevator, thence across to the right until the diagonal showing desired spacing of buckets is reached. At the bottom, directly below this intersection, is found the required capacity of buckets in cubic inches.

If the hourly capacity is given in cubic feet, enter at the top of the chart and follow down until the desired speed line is found, thence across to spacing, etc., as before.

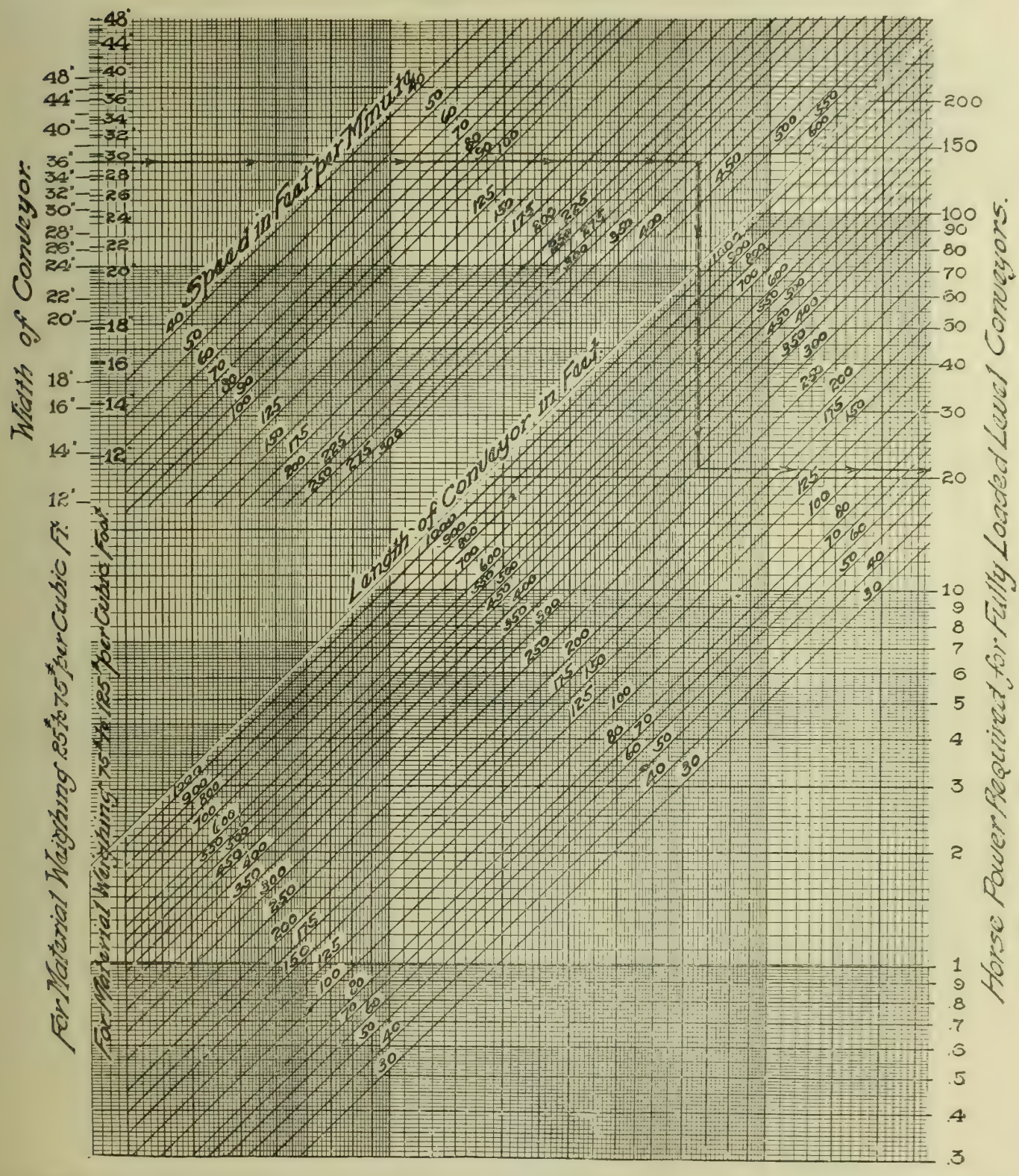
It should be borne in mind that the required bucket capacity found in the diagram is the working capacity, and somewhat larger buckets should be used, depending on conditions. It is common practice to assume the working capacities of Salem Buckets as two-thirds to three-quarters of total capacity when elevators are vertical.

The heavy line gives the solution for 65 tons of coal per hour at a speed of 175 feet per minute and a spacing of 21 inches, showing required working capacity of bucket of 740 cubic inches.

Horsepower required—To find horsepower required for driving a vertical bucket elevator multiply tons per hour by lift in feet and divide by 500. This allows for 100 per cent friction.

Horse Power Chart for Belt Conveyors

Courtesy Robins Conveying Belt Co.



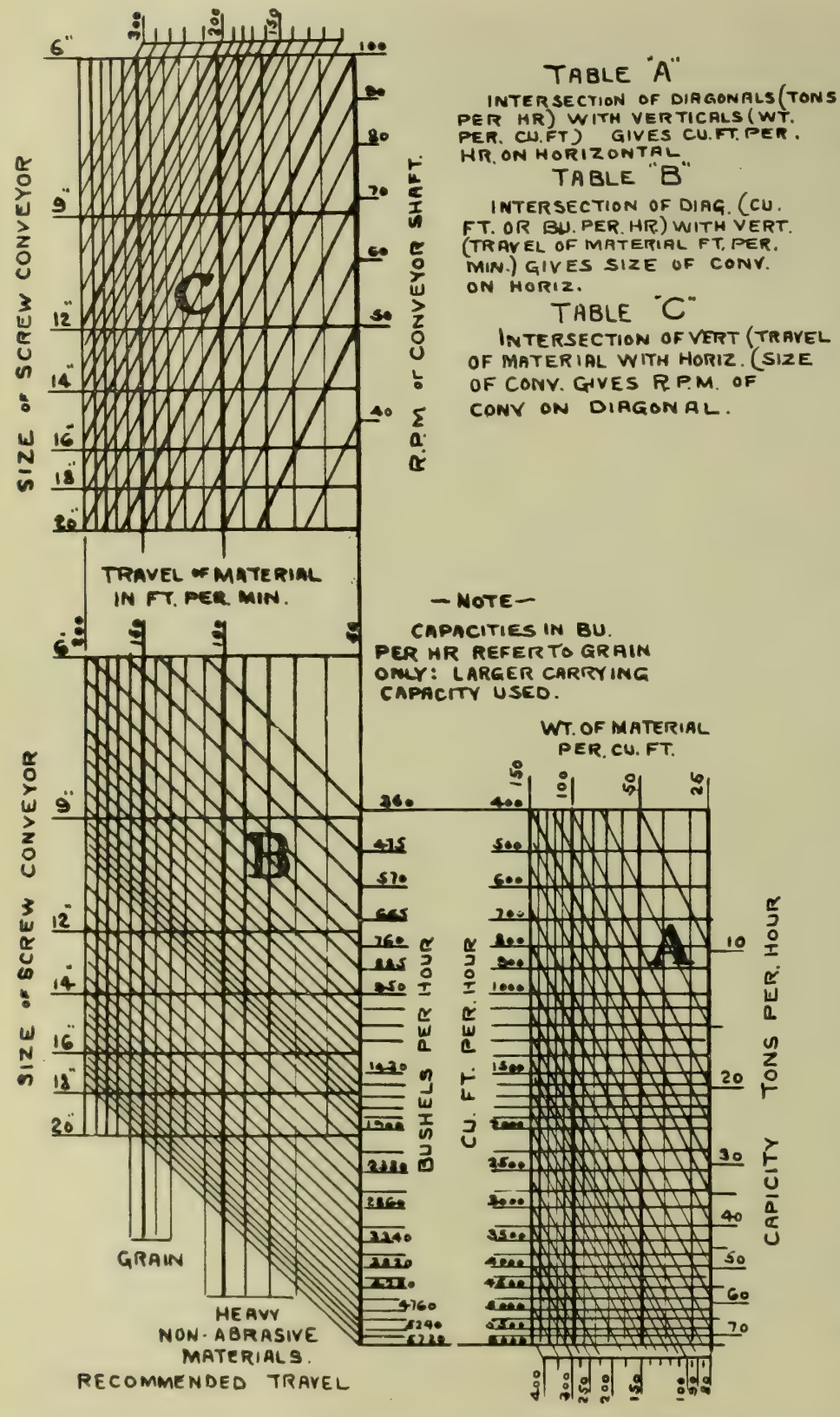
To find the Horse Power required by a fully loaded horizontal Belt Conveyor:

Select the proper width and speed of the conveyor from the chart. Enter the Horse Power Chart at the left margin, being careful to use the "width" column corresponding to light or heavy material as the case may be. From the width follow horizontally across to the diagonal giving speed of belt in feet per minute, thence down to the diagonal giving length of conveyor, thence across to the right margin where the required horsepower will be found. It is obvious that a conveyor designed to carry less than full load, will require less horsepower than indicated by the chart, but as a precaution against the possible use of a full load, we recommend that the full-load horse power be used.

The heavy line indicates the solution for a level, fully loaded, 36 inch conveyor 300 feet long, carrying material weighing not over 75 lbs. per cu. ft. at a speed of 350 feet per minute, and shown that 21 HP. will be required.

For inclined Conveyors, add one one-thousandth part of a horsepower for each foot-ton of lift per hour.

Capacity of Spiral or Screw Conveyors.



Use of Diagram

For example: Find size and speed of spiral conveyor for 40 tons of anthracite per hour. Anthracite weighs 55 lbs. per cu. ft. Starting at the right side of Section A of the diagram and following the diagonal for 40 (tons per hour) to the vertical for 55 (pounds per cubic foot), and thence horizontally to the left we read 1,500 cu. ft. per hour. Crossing to section B and following the diagonal upward into the range of travel speeds recommended for heavy non-abrasive materials, we have the choice between using a 12-in. conveyor with a travel speed of 75 ft. per minute. Here lies the opportunity for application of experienced judgment. We will use the 14-in. conveyor and the easy travel speed of 80 ft. per minute. Following the vertical for this 80-ft. travel speed up to Section C of the diagram we find, at the horizontal for 14-in. conveyor, that the necessary rotative speed is just under the diagonal for 70 r. p. m. The 12-in. conveyor at 105 ft. per minute travel-speed would require a rotative speed of 105 r. p. m. In the lower rotative speed for the larger conveyor we find compensation for its extra size and cost.

The nature of the material, the sizes of its lumps, if any, the inclination of the conveyor box, and other modifying conditions must all be given consideration in application of the diagram results to actual practice.

Horsepower—C W L plus 33,000. C equals a constant: 0.65 for coal and .0 for heavier and sticky materials. W equals weight of material in pounds per hour. L equals length of conveyor in feet.

Courtesy Robins Conveying Belt Co.

Horse Power of Driving Chains

(Webster Mfg. Co.)

Upper diagram determines speed of chain for given diameter of sprocket wheel and revolutions per minute.

Intersection of horizontal lines (dia. of sprockets) gives speed of chain on diagonal line at that point.

Lower diagram determines horse power for chain.

Intersection of vertical lines (speed) and horizontal lines (size of chain) gives horse power on diagonal line at that point.

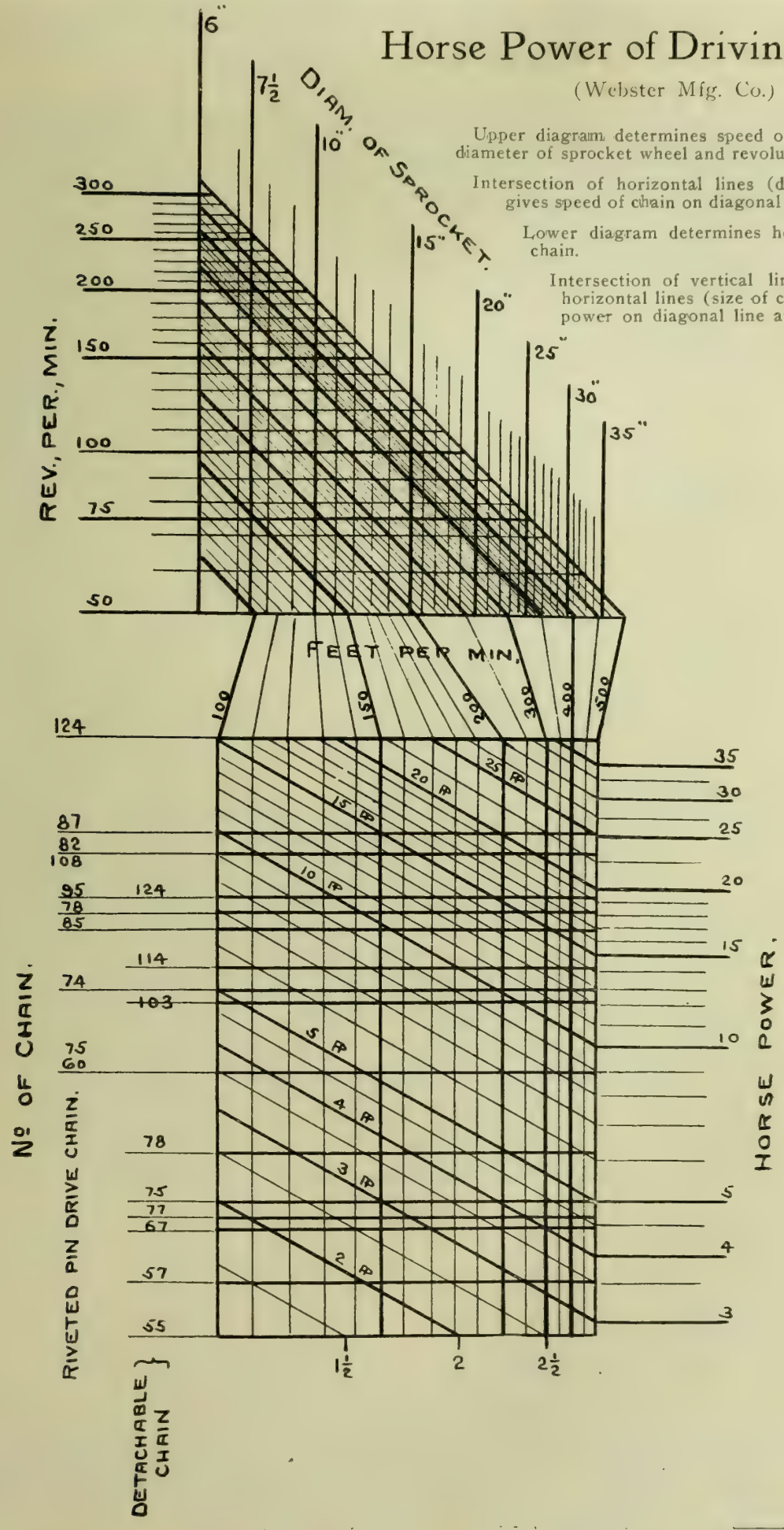
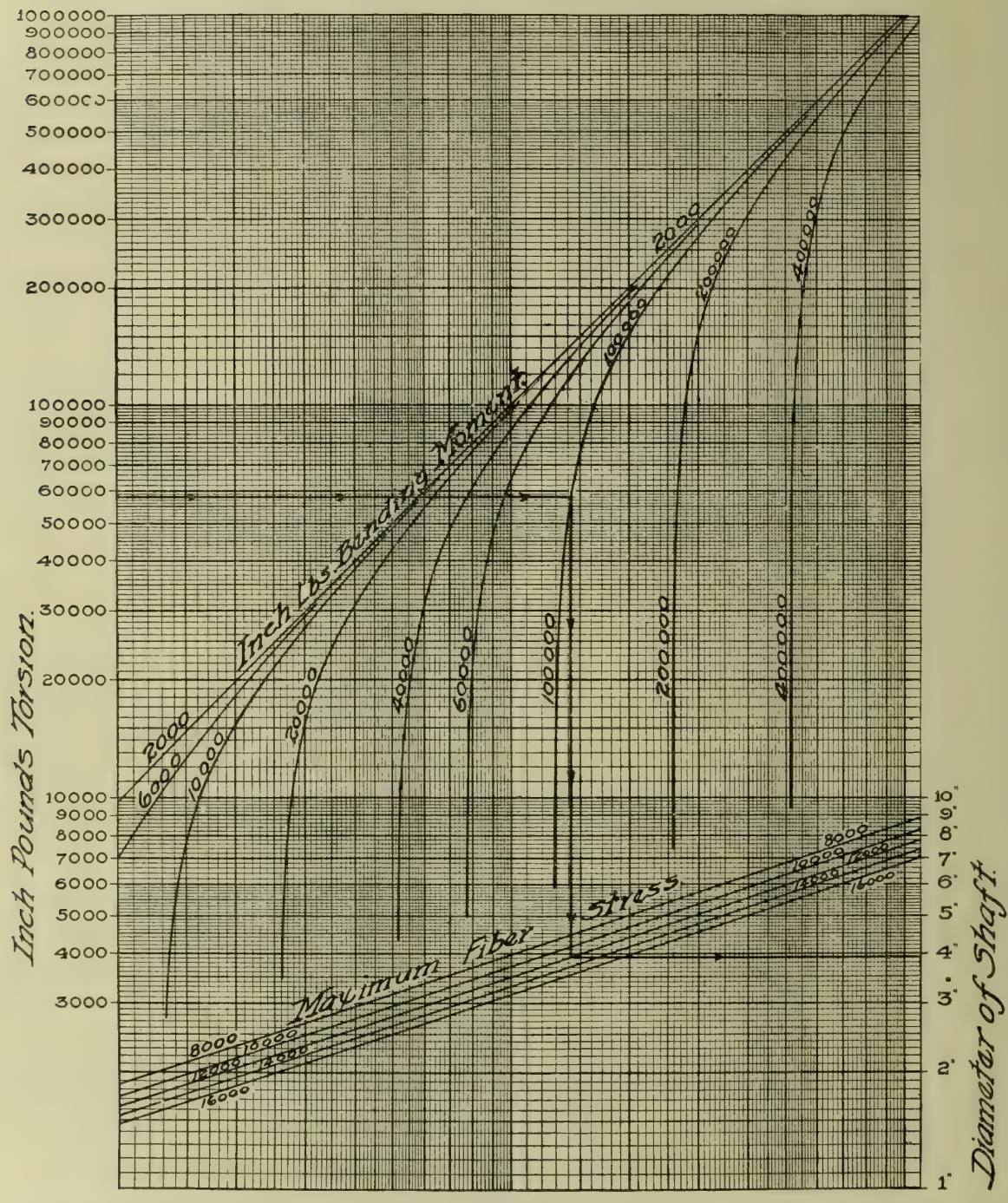


Chart for Finding Shaft Diameters for Combined Bending and Torsion

Courtesy Robins Conveying Belt Co.



THIS chart for finding the proper size of shaft under combined bending and torsion is based on the following formula for equivalent torsion proposed by Prof E. L. Hancock and discussed by him in The Engineering Record of October 9, 1909.

$Te^2 = T^2 + 4\frac{a^2}{b^2}M^2$, in which

T = Torsion
M = Bending moment
Te = Equivalent torsion

$4\frac{a^2}{b^2}$ = Coefficient derived from relation existing between torsion and shear at elastic limit of material This coefficient has been taken as 1.66 for mild steel, as suggested in the article referred to

USE OF CHART. To find shaft diameter when the torsion in inch lbs. and bending moment in inch lbs. are known: Enter at the left with the known torsion, follow horizontally until the curve representing the known bending moment is intersected, thence down to the line representing the maximum fibre stress being used, and read at the right margin the desired diameter of shaft in inches. The heavy line indicates a solution for 58000 inch lbs. torsion, 100000 inch lbs. bending moment and a fibre stress of 12000 lbs. per sq. inch, showing a 3-15/16" shaft to be necessary. The fibre stress to be allowed is a matter of judgment with the designer. 10000 to 12000lbs. will generally be found suitable for small and ordinary sizes, but is rather higher than necessary for large sizes.

This Chart has not been published hitherto.

Digest of what Constitutes a Modern Anthracite Breaker

Courtesy Kingsley & Westcott, Scranton, Pa.

The foundations of a breaker should be commenced well below the frost line to prevent any heaving in severe winter weather which would disrupt the levels and alignments of machinery contained in the building. Ordinarily a concrete or rubble wall of twenty-four inches thickness, with footings three or four feet wide and from one to two feet in depth is sufficient for the foundations, but underneath deep bins and very heavy machinery it is necessary to increase the above dimensions.

The building proper, constructed of either wood, steel or reinforced concrete, consists of one pocket or bin for each size of coal to be prepared, with a storage capacity in each of fifty tons or more and additional space sufficient for the installation of all machinery necessary for the preparation of the various sizes of coal to be marketed, and with height sufficient to allow the coal to practically run by gravity from the top of the breaker through and over the different crushing, sizing and separating devices to the pockets or bins from which it is drawn out into cars and shipped to market.

The coal from the mine is deposited at the top of the breaker in various ways. In some cases by dumping the coal into an inclined conveyor line running to the surface or sometimes slightly below the surface of ground,, to a point near the head of breaker. Or it may be taken up an inclined plane in the mine car and dumped on the head of breaker. In other cases the cars as they come from the mine are conveyed to a perpendicular hoist at the breaker which elevates the car to the desired height and dumps it immediately from the carriage, or the car is removed and dumped independent of the hoist.

In dumping the coal at the top of the building, it is usually deposited in an inclined chute of sufficient pitch to allow the coal to move out by gravity and of capacity to hold one or more mine cars of coal. In the earlier days of Anthracite mining it was customary to place series of bars called grate bars in the lower end of the dump chute. The coal passing over this chute separates the fine from the coarse material by dropping it through the bars and passing it directly to the coarser sizing screens, but this method is somewhat unsatisfactory for the reason that thin flat pieces of large size will turn on edge and pass through the bars, making an irregular sizing of the coarser coal.

In later years it is customary instead of using the grate bars in dump chutes, to narrow the lower end of chute and place one or more shaking screens below the chute with the regular round or square mesh, to allow the largest size of coal intended for market to pass through, causing all of the flat and irregular shaped pieces together with coarse pieces to pass through a set of rollers before coming in contact with the regular sizing screens. This, in general, gives better satisfaction than the bars as it separates these large, flat and irregular shaped pieces from the coarsest size of coal which would otherwise give it a bad appearance and cause it to be condemned for irregular sizing.

Between the lower end of dump chute and the heavy shakers or screens, is often placed the automatic feed of which there are several designs, to regulate the flow of coal from the chute to the screen, thereby eliminating the danger of overloading the screen with a rush of coal as is often the case when dumping coal direct from the mine car into the chute.

As the coal passes over the grate bars or off the end of the heavy shaker, the coarse lumps are deposited on what is termed a picking platform where the pieces of pure rock and slate are removed by hand and passed by various modes of transportation to the rock pile.

More or less bony coal is removed from the pure coal to be separated by hand or to be passed to separate rollers and prepared separately in the dirty side of the breaker or in an annex or washery adjoining the breaker, of which we will speak more fully later.

The picking platform usually consists of one of the two following arrangements: Either a slightly inclined chute from four to six feet in width and from twelve to twenty-four feet in length over which the lumps of coal will pass slowly by gravity and on which the rock and bony coal can easily be checked and removed by hand. Or it may consist of a traveling platform of about the same width, usually made up of two lines of metal links through which are passed small shafts or axles and on the outer ends of shafts are placed small grooved wheels. Across each pair of links is placed sheet steel plates or flights slightly overlapping each other, which are run over sprockets on two separate shafts placed from fifteen to thirty feet centers, making an endless band or platform the top of which is kept in line with the top of sprockets by means of angle iron tracks placed underneath the upper part of band on which the small grooved wheels run, while one of the shafts to which the sprockets are attached is connected with a belt or rope drive and made to revolve slowly, thus making an endless platform on to which the coal runs from lower end of dump chute or end of heavy shaker as the case may be. The coal is conveyed from this point to a point where it will run by gravity to the larger rollers.

On either side of these chutes or traveling platforms is a narrow space with the floor dropped from two to two and one-half feet below the chute or traveling platform, in which men stand and remove the pieces of rock and slate from the coal as it passes along, and throw it into chutes where it runs by gravity to some central point of conveyance to the rock bank. The men also remove pieces that are a combination of rock and coal and place it n platforms at the rear of standing space, in order to chip the coal from the rock and shovel it back on the chute or platform or pass it into a separate chute leading into a set of rolls or crushers. These crushers consist in most cases of two revolving, toothed cylinders turning in opposite directions so that the chunks of coal dropping on top of the crushers are caught by the toothed surfaces, crushed and passed between the cylinders and dropped into a hopper underneath.

Until recently it has been customary to use a single-geared crusher. That is, the shaft of each roll or cylinder is extended far enough over journal bearing to allow of placing a heavy set of cast-iron or steel pinions which mesh one into the other, while on the opposite end of the cylinders the shafts extend to allow of placing a belt pulley or rope sheave and a third bearing outside of pulley or sheave. The customary speed of this style of crusher is about one thousand peripheral feet per minute.

However, one manufacturer of crushers has of late been building a crusher with about only one-third of this speed and the tests have shown a great saving in breakage over the high speed roll. This, we believe, can be attributed largely to the fact of the higher speed, dashing the coal with so much greater force onto the hopper plates underneath crushers, thereby making a much larger percentage of culm and fine sizes of coal than when dropping it at about the natural speed of gravitation.

In order to overcome the loss of power owing to the reduced speed and the lengthening of cylinders to get the required capacity, they add a counter shaft and use a compound gear which obtains about the same results with the same amount of drive friction. From the hopper underneath these crushers, the coal passes by gravity over inclined chutes to the sizing screens.

Formerly the revolving screen was used almost exclusively for sizing the coal, but owing to the fact that in recent years there are several finer sizes of coal prepared than before, and owing to the moisture, fire clay and other sticky substances clinging to the coal as it is taken from the mine, it is impossible to prepare the finer sizes without water; and from the fact that the revolving screen is not well adapted to the application of water, it has quite generally given way to the use of the flat shaking screen, which is a saving in breakage as well as being better adapted to the application of water necessary in preparing the fine coal for market.

The shaking screen consists of two parallel side pieces placed from four to six feet apart, having pieces of angle iron bolted or riveted across underneath about every three feet, on which are bolted steel plate segments, with perforations of proper size to allow all pieces of smaller diameter than the size desired to pass through the perforations and drop onto the next deck, or to pass to another shaker with a size smaller perforation and so on until the smallest size desired has been reached. Then the fine

culm passing through the perforations in the bottom deck or shaker is dropped into a water-tight hopper and is carried by the water through a slightly inclined trough or pipe to the refuse bank.

The shaking screens are placed on a slight incline with the discharge end lower than the end on which the coal is deposited so that the shaking motion gradually moves the coal over the screens.

They are usually suspended from overhead timbers by rods, chains or spring boards, although sometimes when very heavy screens are used below the dump chute for separating the fine run of mine coal from the coarse, they are arranged with axles and wheels similar to a mine car wheel, such wheels resting on short pieces of iron track, thus allowing of a shaking motion with a minimum amount of friction.

The shaking motion is attained by means of drive rods attached to the rear end or sides of shaker, leading back to a cam shaft at the rear of shaker. This shaft revolves at a speed of from 140 to 165 revolutions per minute, while the throw of the cam is usually about five inches. The shaking screens are made in one, two, three or four decks and usually hung in sets of two or more, one over the other and each set attached to separate cams on the same shaft.

The cams are so keyed on the shaft as to make one set counter-balance the other as nearly as possible, thus eliminating the strain and vibration on the building to a great extent.

Of all the numerous styled shaking screens with which we have had experience, we are most favorably impressed with the board-hung, wood-sided shaker type flexible arm or drive rod.

These rods are simply a piece of 3"x6" oak or other hard-grained wood bolted directly to the shaker sides. At a point near the end which is bolted to the side of the shaker, they are cut down to a thickness of from two to three inches for a distance of two or three feet, thus allowing the rods to spring up and down as the cams revolve and so preventing any joints at the connection of rods with the shaker from wearing and becoming loose.

As the coal leaves the sizing screens the various sides are dropped into chutes leading to the bins or pockets. Formerly it was customary to hand-pick the coal almost wholly and these chutes led directly to the bins. Seats were placed across the tops and boys stationed on the seats would pick out the rock and slate and throw it into separate small chutes which led to a refuse bin or some central point and then conveyed in cars or by a conveyor line to the rock bank.

Of late years there have been a great many mechanical devices placed on the market for separating the rock, slate and bony coal, and these do away with much of the hand-picking and cheapen the cost of preparation.

The jig, of which there are several different makes, is used almost exclusively in the southern districts of the Anthracite fields for these separations, but in the Lackawanna and Wyoming region where there is more dry preparation of coal, the gravity pickers are more largely used and in some cases a combination of the jig and gravity picker is used and this in a majority of cases gives very good results. In fact it is almost impossible to make a satisfactory separation with one single mechanical separating device for the reason that most collieries are mining from two or more different strata at the same time and the specific gravity of the material from each stratum differs greatly and the sticky substances vary, allowing some grades of coal to run much freer on the same pitch than others, thus making it impossible to adjust a single machine to suit the different conditions.

The separation of flat slate from coal which also carries a percentage of flat coal seems to be about the most difficult separation for any device yet placed on the market.

This separation is difficult for the jig for the reason that while it is heavier than the coal, bulk for bulk, it is of much flatter fracture thus giving a greater surface for the water to work on, therefore lifting about as readily as coal of the same cubical contents but of more compact form. While on the gravity picker, the surface of flat slate being so much greater according to weight, it sticks on the inclines or moves so slowly that it checks the natural flow of the coal, causing a heavy dropping of coal with the slate.

There are various angle bar and slotted plate arrangements which remove the flat material from the more compact shapes very successfully but in most cases the difficulty is that the device which will remove the flat slate will remove the flat coal as well.

A device has recently been invented to attach directly to the shaking screen which in most cases seems to give wonderful results, removing the flat slate very satisfactorily with but a very small percentage of flat coal. We believe that the most satisfactory combination of mechanical separation would be the device spoken of on the shaking screen to remove the flat slate, then pass the coal over an Emery spiral or some other device of gravity picker, adjusted to save only pure coal as nearly as could be, then pass the droppings from the gravity picker through a jig.

For the reason that the coarser sizes of coal are not always in demand, it is often necessary to rebreak the Grate and Egg sizes to Stove or Chestnut size. This requires another set of rolls or crushers than the ones above mentioned This set of rolls called merchant rolls are sometimes placed below the shaker, making the smallest size of coal to be rebroken with elevation sufficient to pass the coal as it leaves the rolls by gravity to the next finer shaker. Sometimes they are placed at a point low enough for the coal to gravitate to the rolls and then the coal is re-elevated to the sizing screens.

Still another set of rolls is usually required for breaking down the bony and impure coal as it is picked out either by hand or with mechanical devices, so that this in turn may be prepared and marketed with the finer sizes. These rolls are generally placed at a point low enough so that all pickings necessary to be rebroken will gravitate to them, and the material after passing through these rolls is elevated back to the sizing screens.

It is quite necessary in most cases, notwithstanding the various mechanical separating devices, to arrange a small space for hand-picking between the lower picker and the point where the coal enters the pocket so that any pieces of rock and slate escaping over the mechanical pickers may be thrown out and pass to the different points of disposal.

In drawing the coal through gateways from the pockets into the cars, all except the very fine sizes is drawn over lip screens, consisting of perforated or slotted steel plates, so that most of the fine material caused by breakage in the pockets and in transportation to the pockets, may be separated from the coal before it passes into the car. This screening in turn is conveyed or flushed by water to some central point from which it is again elevated to the sizing screens.

What is known as a condemned pit is sometimes dug underneath the loading track and usually near the center of the breaker.

Over this pit are placed the cars of condemned coal and the coal drawn out. From this pit the coal is again conveyed and elevated back to the sizing screens from which it again passes through the different modes of separation, thereby doing away with shoveling and handling in the car.

The power for operating the machinery in the breaker is usually steam although of late a number of breakers are run by electricity. The engine or the electric motor, as the case may be, is generally placed underneath or at a point just outside the breaker from which the power is conveyed by belt or rope drive to a main shaft at some point in the building and from this main shaft and the needed counter shafts, separate belts or rope drives are run to the various machines throughout the breaker.

At some collieries they have a double breaker for the preparation of the coal where one side prepares only the pure lump coal from the run of the mine, while the other prepares the fine and the bony material. In this case the pure coal side is usually operated without water while for the side preparing the fine and the dirty coal water is generally used. In a double breaker the coal of the same size from each side is run into the same pocket and to overcome the bad appearance caused by mixing the wet and dry coal together, it is thoroughly washed on the lip screens when being loaded.

At other collieries they have a washery independent of the breaker into which all of the dirty and fine coal is conveyed and prepared. In such instances it is loaded independent of the main breaker. The same washery is sometimes used for handling over the old refuse banks which were accumulated in former years and in which remains a good percentage of pure coal.

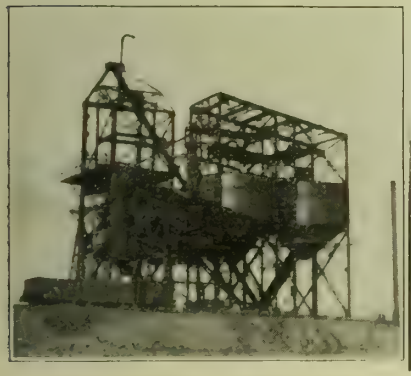
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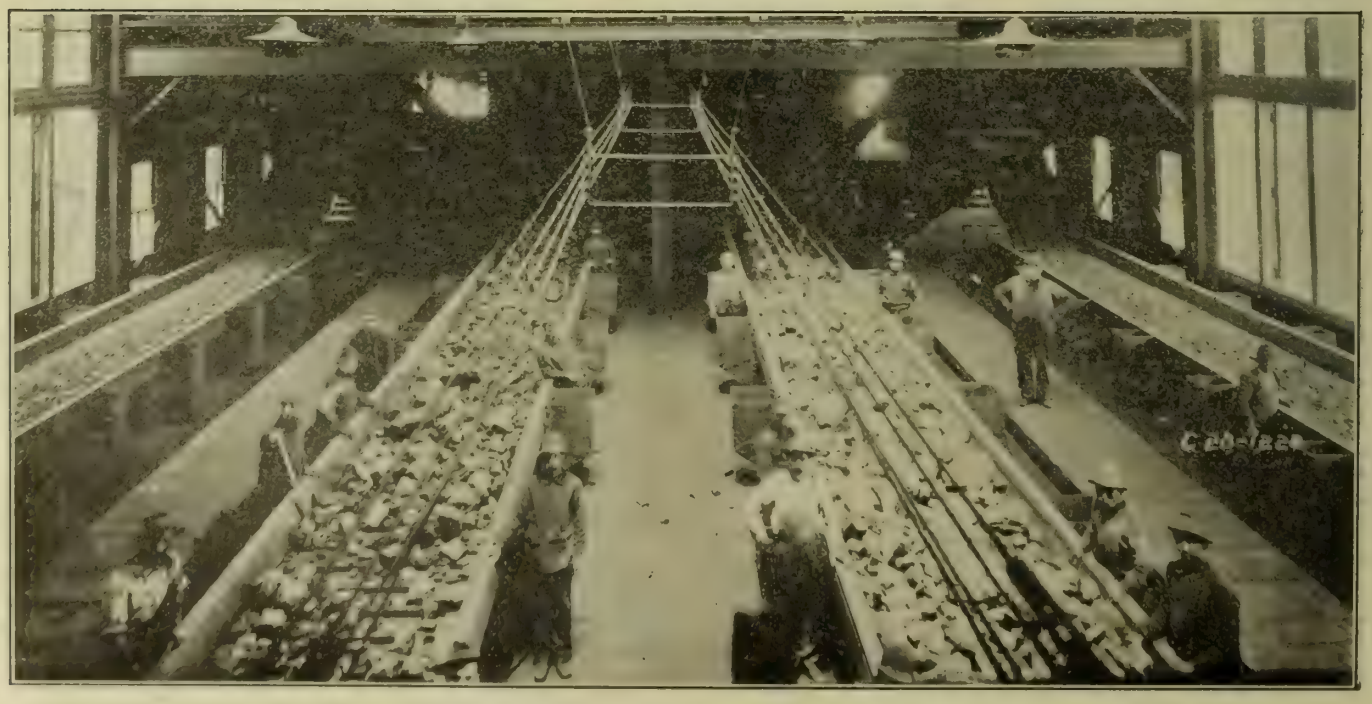
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Logan Coal Co., Ethel, W. Va.
Cub Fork Coal Co., Logan, W. Va.
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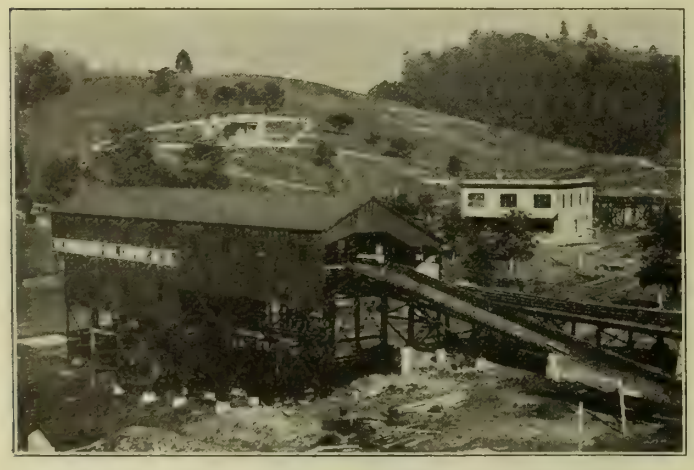
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Mine Car Trucks

COAL MINE EQUIPMENTS

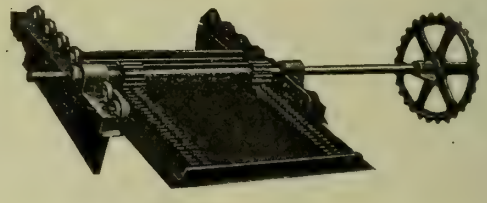
FAIRMONT Steel Tipple and Complete Screening and Loading Equipments are designed and built to meet all conditions for the best possible preparation and loading.



Steel Tipple with two Track Gravity Equipment, Marion Gas Coal Co., Enterprise, W. Va.



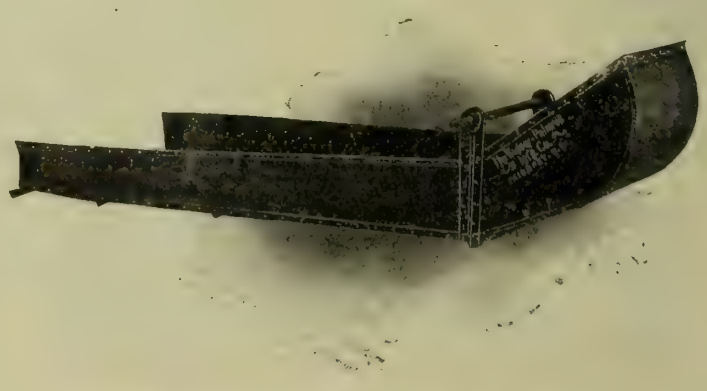
Double Steel Tipple and Equipment—Consolidation Coal Co., No. 32 Mine.



Standard Rack and Pinion Bin Gate, Underside view.



18" Fairmont Rotary Box Car Loader. Made in four sizes.



Standard "Fairmont" Weigh Basket—We make all types.

The Home of

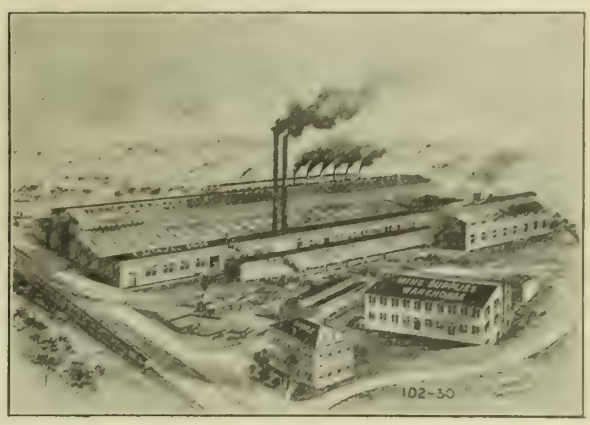
TRADE MARK REGISTERED
FAIRMONT
02-101-20

COAL MINE EQUIPMENT PRODUCTS

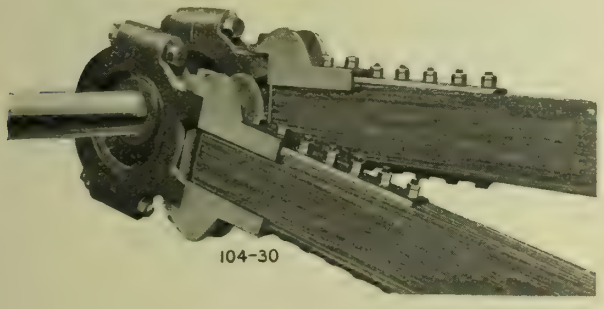
The largest and best equipped plant in the United States devoted exclusive to the manufacture of

COAL MINE EQUIPMENTS

Our engineers and mechanics are Specialists in this line.



FAIRMONT Shaker Screens fitted with Patent Flanged Lip Screen Plates; balanced in weight; strongly constructed and driven by our special design Connecting Rod and Eccentric will screen your coal to any desired size and free from slack.



Eccentric and Connecting Rod End.

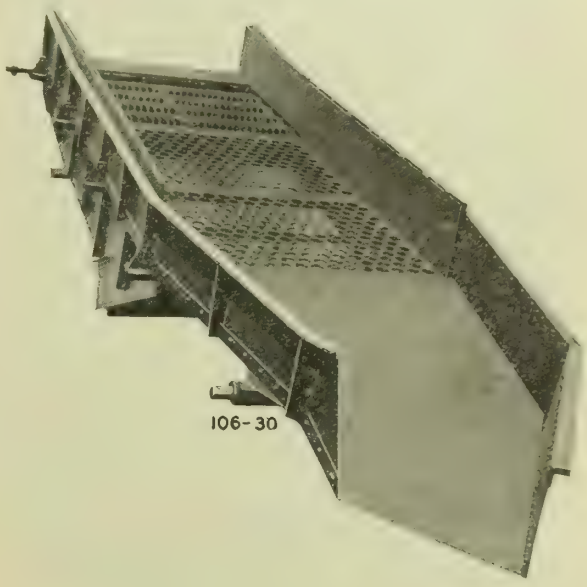


Illustration of lower or delivery Screen with bevel end to distribute coal evenly on to Loading Boom Conveyor. This particular screen is equipped with both Lip screen plates and flat plates with round perforations to meet customers demands. We furnish screening surface to suit your coal.

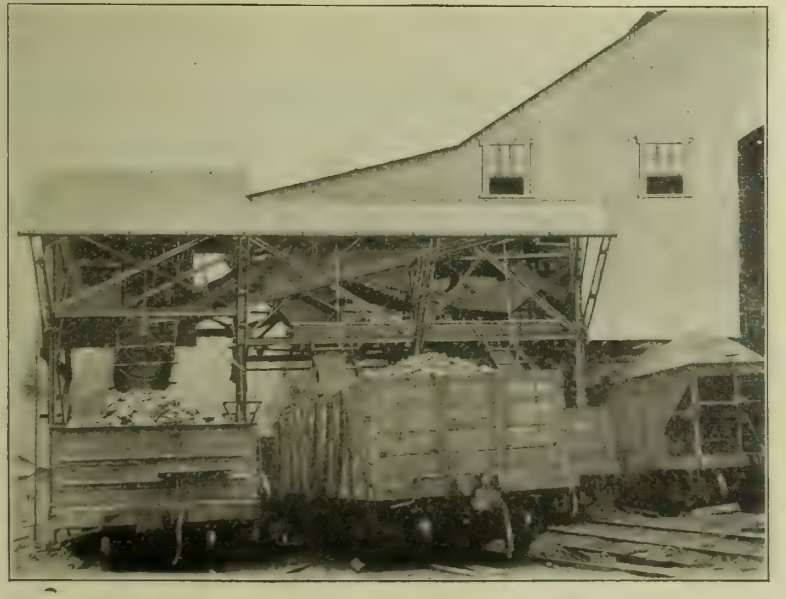
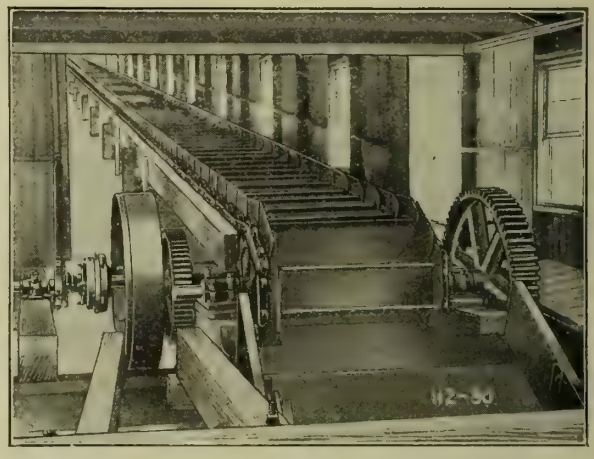


Illustration to left is a Steel Tipple with Shaker Screen Equipment and Spiral End Loading Chute, erected in 1911 for J. B. B. Coal Co., Twin Branch, W. Va.

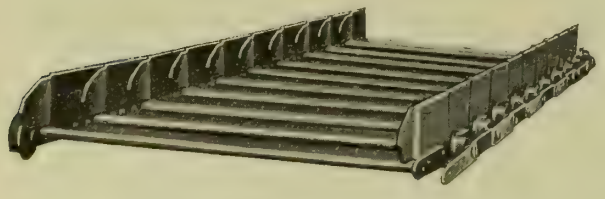
FAIRMONT MINING MACHINERY CO.

FAIRMONT Apron Conveyors, Picking Tables and Loading Booms

Our Apron Conveyors, 6 inch, 8 inch, 12 inch and 18 inch Pitch Chain and Pans, any width, are designed to meet all conditions where this type Conveyor is desirable—for Picking Tables, Loading Booms (or combination of both) Apron Feeders or long Conveyors for elevating the coal up to or lowering it down to the tipple.



Apron Conveyor—Capacity 200 tons per hour.
Pittsvein Coal Co., Flemington, W. Va.



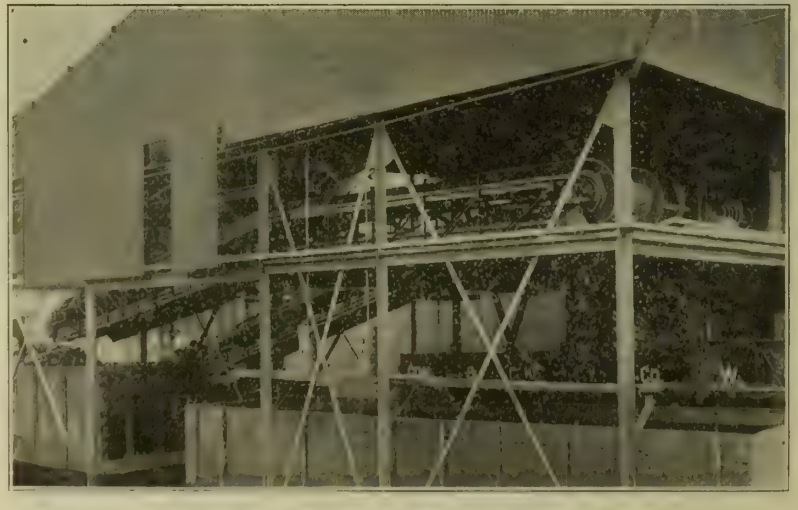
Section of Standard 12″ Pitch Conveyor.

This Conveyor has been in continuous service more than seven years with practically no expense for repairs. Runs easily and does not break the coal.

Loading Boom Conveyors

Are an absolute necessity where breakage is to be eliminated in loading.

If you screen and prepare your coal carefully you do not want it broken up by dropping a long distance into the car—**Fairmont** Loading Booms equipped with our Power Hoist for raising and lowering and **Fairmont** R. R. Car Retarders for controlling the cars are a guarantee against breakage.



Combination Picking Tables and Loading Booms.

FAIRMONT MINING MACHINERY CO

TRADE MARK REGISTERED FAIRMONT Cable Conveyors

This type Conveyor is very popular and economical for conveying coal down long inclines in place of incline planes and monitors.

The first cost is low and the saving of labor will soon pay for the installation.



Looking down Conveyor Trough to Tipple, Elkhorn Mining Corp., Fleming, Ky. No. 301 Conveyor.



Cable Retarding Conveyor
1410 ft. long 31° incline.



This type of Conveyor also used extensively as horizontal Conveyor for Boiler House coal; slack or refuse on tipple and is a good serviceable piece of equipment requiring very little power and cost of maintenance is low.

FAIRMONT MINING MACHINERY CO.

TRADE MARK REGISTERED FAIRMONT Car Hauls

FAIRMONT Mine Car Up-Hauls, endless Cable or Chain type for hauling Cars up to Tipple from lower levels.

Endless Cable Mine Car Retarders or down-hauls for lowering Mine Cars down to Tipple from higher levels.

You save breakage of coal when you deliver it to Tipple in the Cars.



Endless Cable Car Haul, Marion Gas Coal Co., 450 ft. long, 14% grade, 3 cars per minute.

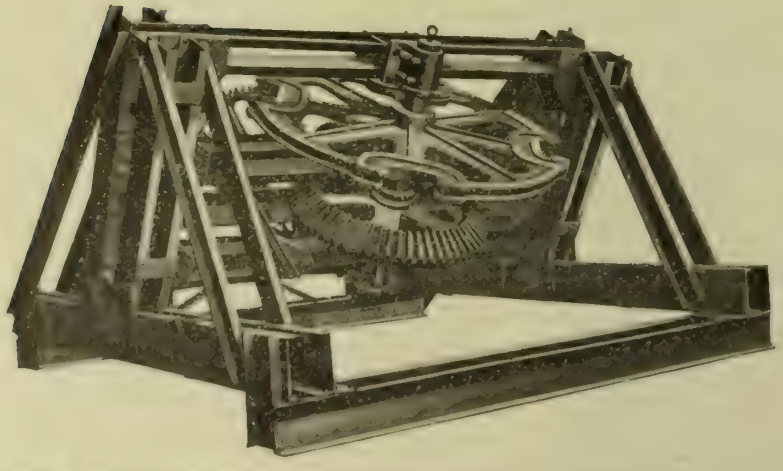


Cable Car Haul, Consolidation Coal Co.
A recent installation.

In successful operation six years and rope still in good condition.



Endless Cable Car Haul
U. S. Gypsum Co.



Head Sheave and Driving Machinery complete, mounted on Steel Head Frame. U. S. Gypsum Co., Car Haul, Gypsum, Ill

FAIRMONT MINING MACHINERY CO.

FAIRMONT Railroad Car Retarder

No modern tipple is complete without Fairmont Railroad Car Retarders to handle the cars under the tipple.

Advantages

Cars are under control of trimmers or dumper, and lowered a few inches at a time insuring even loading; and by keeping coal right up against the end of loading boom or loading chute breakage is reduced to minimum.

No man is needed at the brake to keep cars from running away, no matter how slippery the track may be.

As a car is always following the car that is being loaded, both controlled by same retarder, a car is always in place ready to load without a stop.

Nine times out of ten one man at least can be eliminated which saving alone soon pays for the whole installation.

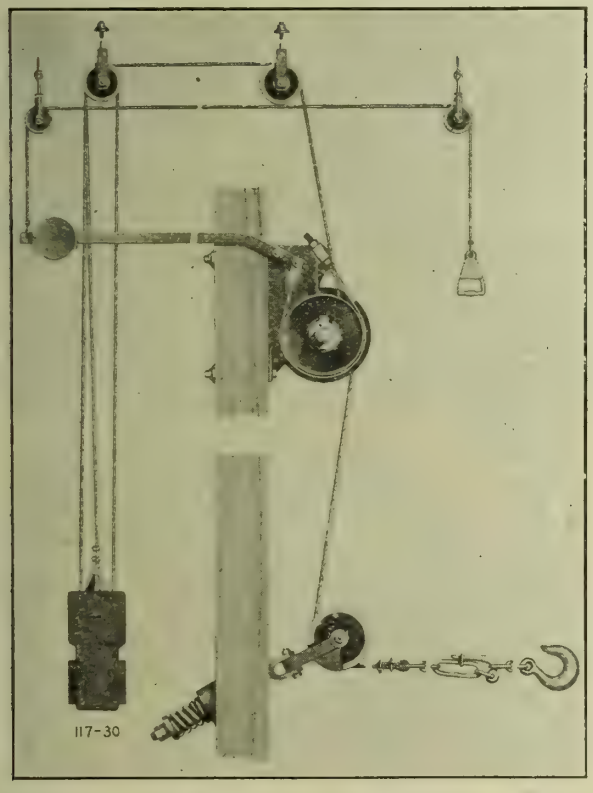


Fig. 1—General Assembly.



Fig. 2—Retarder installed in Tipple.

General Description

Figure 2 shows a retarder installed on a wooden tipple—the retarder on one post and the guide sheave on another post.

Figure 1 shows assembly of retarder on one post, and very often this is an independent post placed just above the tipple especially for the retarder.

In Figure 2, A is small drum on main shaft for counterweight line; B is counterweight; C is hand hold on line to brake lever; D is brake lever with counterweight for tightening brake band; E is double buffer spring to take shock off of post and retarder when cars are stopped; F is main drum on which main line that hold cars winds; G is guide sheave for main line; H is crank for winding main line on drum in case anything should happen to automatic re-winding attachment; J is brake wheel and brake band.

All parts are made strong to withstand the strain on them when starting and stopping the cars. The main line is ⅝"—6x19 plow steel, giving maximum strength for the size.

Method of Operation

For the most successful operation the track should have enough grade (about 2½%) so cars will run without being barred or pushed. When the first car is lowered to the upper end of tipple the hook on end of main line is atached to car at most convenient point on front truck. It is then dropped down to loading point by pulling hand line "C", raising brake lever "D", releasing brake and allowing car to go forward as far as desired. The car is stopped by releasing hand line which allows brake lever to be lowered by weight on it, thereby tightening band on brake. As the car is being loaded this operation is repeated several times, lowering the car a few inches at a time to keep coal up against loading chute or boom. When car is lowered to point where main line is about all off the drum, the hook is released from first car by means of toggle attachment. As soon as released from car the counterweight "B", which has been raised as the main line comes off the drum, drops down, reversing the motion of drum and automatically winds the main line back on drum, and in position to attach to next car.

The counterweight "B" and hand hold "C" for operating brake can be carried to any convenient point by means of small sheaves provided for the purpose.

Safety First

Eliminate the possibility of injury to your men by installing Fairmont Retarders, and keep your men off the cars.

FARRIS BRIDGE COMPANY

CHARLESTON, W. VA.

Engineers and Contractors

Bridges, Viaducts, Coal Tipples Mill Buildings
Reinforced Concrete and Steel Construction



Dingus Run Tipple, Ethel, Logan County, West Virginia.
The Largest Steel Tipple on Guyandotte Valley. Designed and built by Farris Bridge Company.



Two 55 Foot Reinforced Concrete Arches designed and built by us at a cost of $4900.00. Reinforced concrete, rivals, in economy, all other forms of construction. Plans and estimates free.

THE JEFFREY MANUFACTURING COMPANY

SALES OFFICES:
New York.....50 Dey St.
Philadelphia.....Real Estate Bldg.
Canadian Works.....Montreal
Pittsburgh.....Farmers Bank Bldg.
Charleston .....West Virginia

Main Office and Works:
962 North Fourth Street
Columbus, Ohio

SALES OFFICES:
Chicago.....McCormick Bldg.
Birmingham.....Brown-Marx Bldg.
Denver,.....First National Bank Bldg.
Broadwell, O.....H. H. Townsend
Louisville, Ky.....109 N. Bailey Ave.
Middlesboro, Ky., Middlesboro Hotel.

Car Hauls---Dumps---Screens



Jeffrey Cable Haul-up with Tilting Spurs and Rollers.

The Jeffrey Cable Car Haul

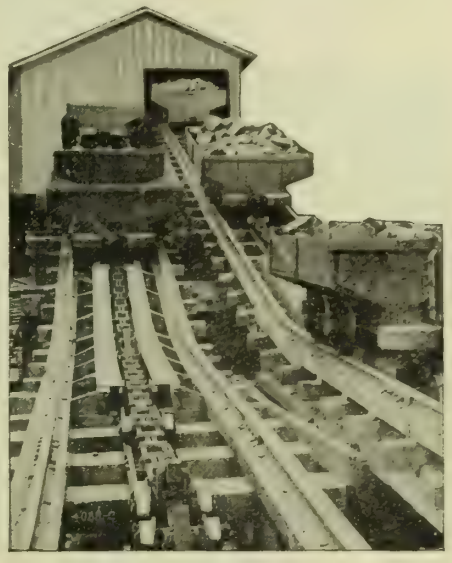
is especially adapted for Maximum Efficiency, Economy and Service in the Continuous Haulage of Coal.

Because of its Extreme Flexibility, a Single Cable will both elevate and lower the cars, as illustrated in the left-hand illustration.

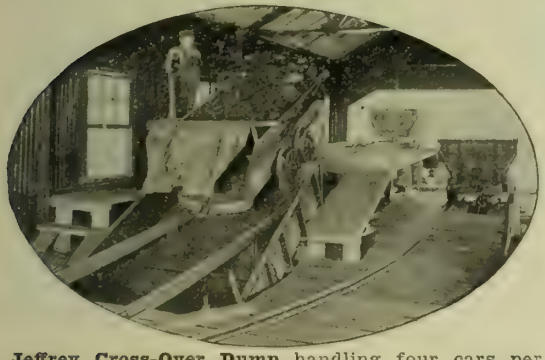
Jeffrey Chains

are extensively used for single cars, as shown, and also trip haul-ups in and about the mines.

Special Car Haul Bulletin No. 21 will be sent on request.



Jeffrey Empty and Loaded Chain Car Haul.



Jeffrey Cross-Over Dump handling four cars per minute at Big Five Coal Co., Stewartsville, Ohio.

The Jeffrey Cross-Over Dump

has Quick and Continuous Action and Uninterrupted Movement over its Unbroken Continuous Rails.

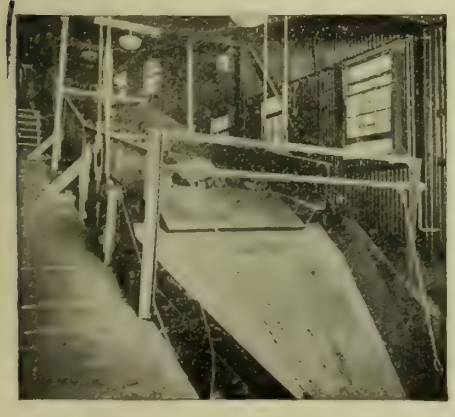
Dumps Automatically — Is always under complete control. Only one man required to operate it.

Handles up to six cars per minute.

Write for Bulletin No. 44-B.



Jeffrey Rotary Tipple Dump. Revolves but half way around and discharges with little breakage of coal. Operated by gravity or power.



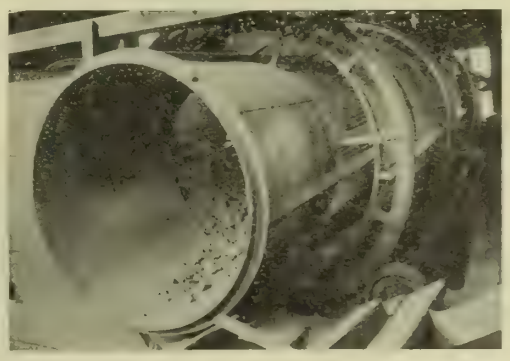
Tandem of Shaking Screens with Adjustable End Loading Chute.

Jeffrey Coal Tipple Screens and Chutes

Made to order from Designs and Specifications furnished, or from our Standard Equipments.

We can furnish Conical, Cylindrical and Hexagonal Revolving Screens, of Wire Cloth or Perforated Metal, with single or multiple screening surface.

Write for Screen Bulletin No. 69-B.



Double Revolving Screen. A popular screen for hard service. Made in all sizes.

THE JEFFREY MANUFACTURING COMPANY

Conveyers and Elevators

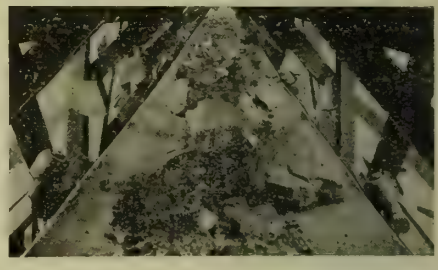
Jeffrey Cable Retarding Conveyers make possible the opening of practically inaccessible coal fields. They are successfully operated in lengths up to and over 1000 feet.



Cable Retarding Conveyer illustrated above handles 200 tons of coal per hour from upper level to tipple building in the valley.



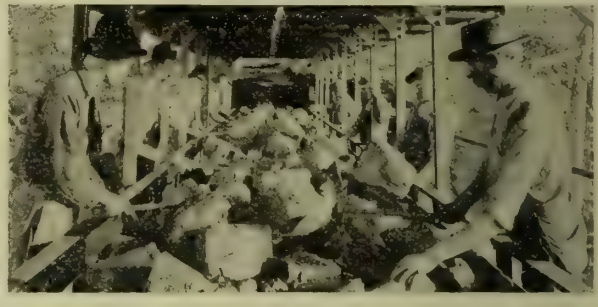
"Scraper Type" Conveyer with Steel Roller Chains with large Steel Reinforced Flights for handling Run-Of-Mine Coal from dump house to tipple building.



A Jeffrey 36-Inch "Century" Belt Conveyer handling coal from mine entry to tipple, a distance of several hundred feet.



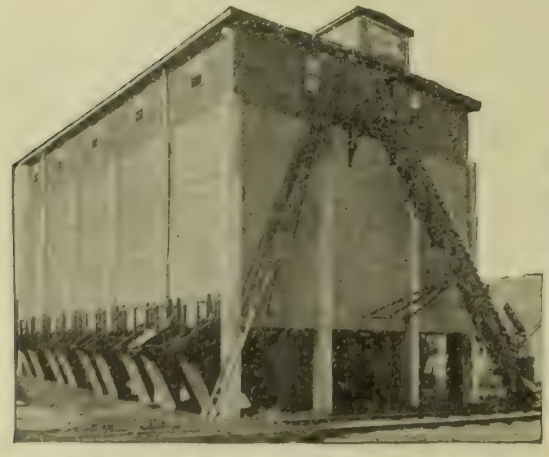
Twin Steel Tipples, each of 300 tons capacity per hour, U. S. Coal & Oil Co., Holden, W. Va. Bituminous Coal is delivered to the tipples by **Jeffrey Beaded Flight Conveyers.**



Double Beaded Flight Apron Conveyer delivering coal from mine.

JEFFREY RETAIL COAL POCKET EQUIPMENTS.

Our STANDARD designs may be adapted to various designs of Storage Pockets.



200 ton capacity Concrete Coal Pocket at Lawrence, Mass., using Jeffrey Elevator, Conveyer and Loading Chutes. This equipment handles five different sizes of coal.

Type "A-5" Wagon Loader handling Bituminous Coal.



Jeffrey Portable Self-Propelling Wagon and Truck Loaders will handle from 1 to 1¼ tons of coal per minute from ground storage to wagons, trucks or gondola cars. **Send for Bulletin No. 166.**

THE JEFFREY MANUFACTURING COMPANY

Coal Picking Tables and Adjustable Loading Booms

A Modern Tipple Equipment showing Jeffrey Combined Picking Table and Adjustable Loading Boom.

Capacity, 4000 tons of bituminous coal daily.



You get Two Conveyers in One when you buy a Jeffrey Combination Picking Table and Loading Boom.

Each the best known for the purpose.

A Combination that Insures a Clean, Unbroken Product and Higher Market Standing and Prices.



Picking Table with Adjustable Loading Boom lowered into car.

Standard Picking Tables and Loading Booms

are made in sizes and widths to suit practically all conditions and capacities for Large and Small Mines. Can be installed in old or new tipples.

JEFFREY Picking Tables are made with Single, Double or Treble Compartments.

Ask for Bulletin No. 45.



Double Compartment Picking Table handling two grades of coal in Tipple Building.

Our Picking Tables

with Perfect Discharge Flights and Steel Thimble Roller Chains, form a moving pan, which makes an ideal arrangement for picking the refuse from the coal.

The Jeffrey Loading Boom

reduces breakage to a minimum—practically laying the coal down into the car. It is mechanically balanced thus requiring little power to operate. Can be applied to new or old tipples.

Overlapping Double Beaded Flight Conveyer Type of Picking Table.



The Bead stiffens the flight, preserves its shape, and provides a close tight joint.

A table of moderate length furnished from the factory, ready to run. We also furnish steel aprons with or without s upporting structures or driving machinery.

THE MINERAL RIDGE MFG. CO.

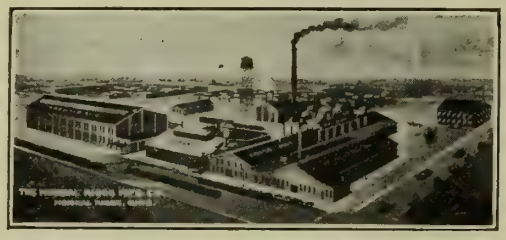
MINERAL RIDGE WELL-MADE

Engineers and Manufacturers of

Coal Tipple Equipment

MINERAL RIDGE WELL-MADE

General Office and Works:
MINERAL RIDGE, OHIO



Branch Office:
26 Clinton Bldg., Columbus, Ohio
Orin E. Kelly, Sales Engineer

Products

Equipment for bituminous coal mines from pit-mouth to rail road cars.

"RIDGE" Inclined Shaking Screen.
"KELLY" Horizontal Shaking Screen.
"RIDGE" Self Dumping Cage.
"RIDGE" Spring Kick Back Dump.

Steel Tipples, Gravity Screen Rigs, Picking Tables, Mine Cars, Bicycle Spoke Sheaves, Incline Drums, Retarding Conveyors, Car Hauls, Monitors, Conveyors, Boom Loaders, Cages.

A few of the advantages of the KELLY balanced horizontal screening machine are:

Minimum height required.

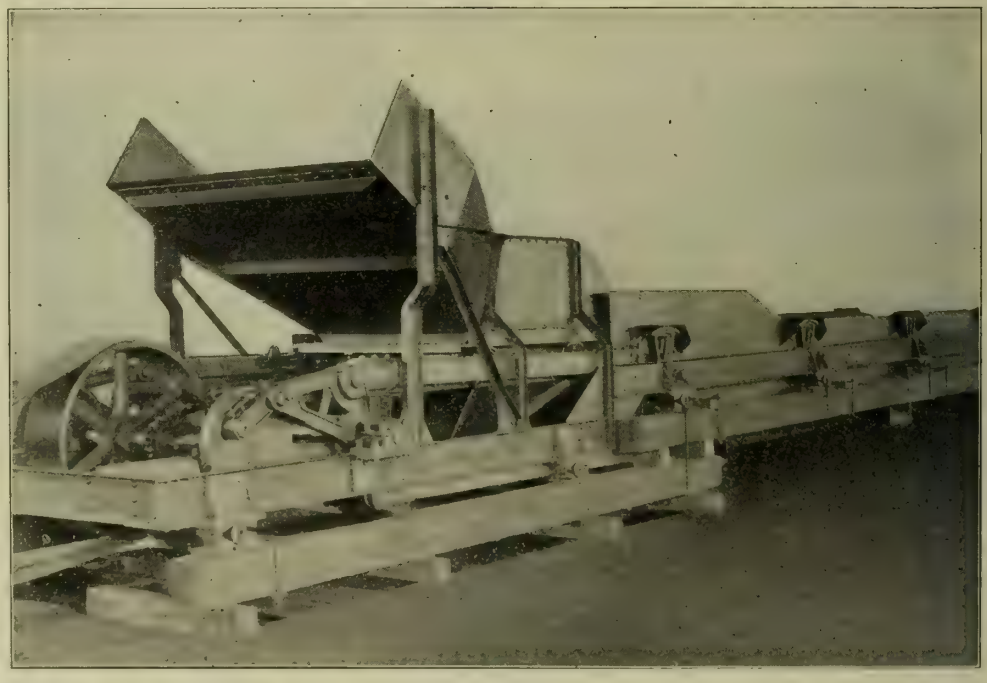
Thorough shaker re-screening of fine coals.

Boiler coal or pickings conveyed in either direction.

A complete machine, not an assemblage of parts.

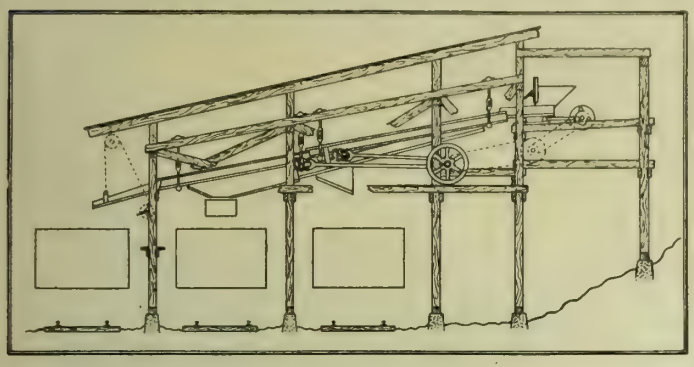
Entire machine mounted on rollers, self shock absorbing.

No expensive structure or foundation required.



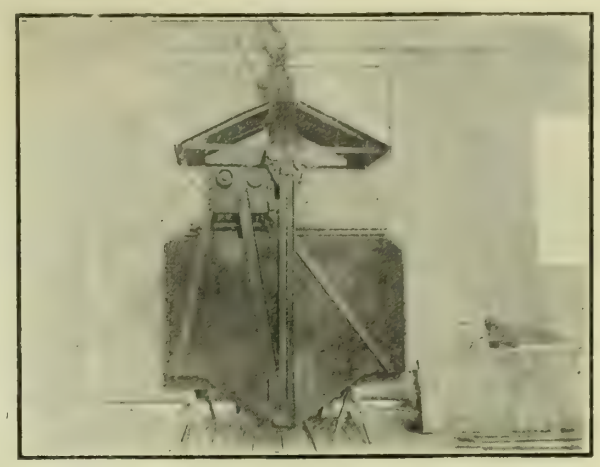
We urge your investigation of the merits of this screening machine as being the best for the work of to-day because it anticipates the needs of to-morrow. As the name indicates, it is built in two sections, an upper screen for the primary screening, and a lower screen or distributing pan for the re-screening and distribution of the fine coals. These sections work in opposite directions and balance each other, all drops of coal being reduced to a minimum and all coals loaded length-wise with the cars. As this screen sets level it forms an excellent picking table and as the materials move in opposite directions on the two screen sections, the pickings and boiler fuel may be conveyed to either end of the tipple as conditions may require. Our method avoids the common practice of installing a heavy frame or foundation built from the ground up. We assemble the screens, feeder hopper, feeder plate, etc. in a structural steel frame as a complete and compact unit and support this unit on a tipple by means of rollers, thus making a complete machine, self-contained and self shock absorbing.

Write us for full explanation of these and other peculiar features that make our screening machine the best for your conditions.



The Ridge Sloping Screen
of to-day is as far in advance of the shaking screen of a few years ago, as that was in advance of the old gravity screen. Experience has brought out a number of refinements looking towards the ease in running and lessening of vibration. Designs are varied to suit individual requirements, but as well known mechanical principles are adhered to, the apparatus requires a minimum of attention after installation, and is moderate in cost. The drive is the continuous rotary motion imparted by heavy eccentrics and the screen is so designed that it runs without side lash, which in connection with the shock absorbing springs, makes a thoroughly satisfactory mechanical screen.

The Ridge Self-dumping Cage
is one of the greatest money savers in a tipple. It is made to fit any car or shaft; automatically cages



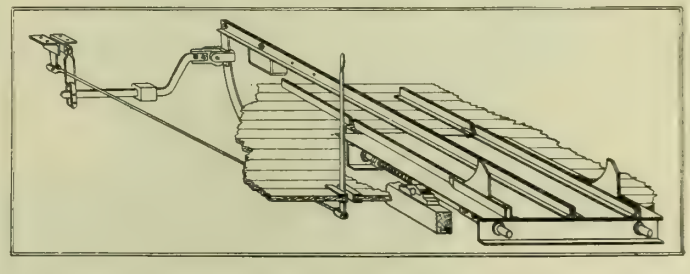
the car without the use of horns; has positive acting safety cams; has the proper length between pivot and dump roller to insure a slow dump for the car and to prevent the chair from turning turtle in case of overwind. Weight of material has not been spared and the design is amply strong at all points where years of experience have proven it necessary. This is not the cheapest, but it is the very best cage on the market.



Ridge Mine Cars

There is a reason for our enviable reputation on Mine Cars. All we ask is for you to examine one of our cars and see how it is put together, and what service it has given.

The Ridge Spring Kick Back Dump
is advantageous on account of the limited space used. This type will handle cars remarkably fast and will



answer every purpose for the mine of average output. Built with special regard to strength, all parts are made extra heavy to withstand the constant pounding and strain of continued service.

Service Department

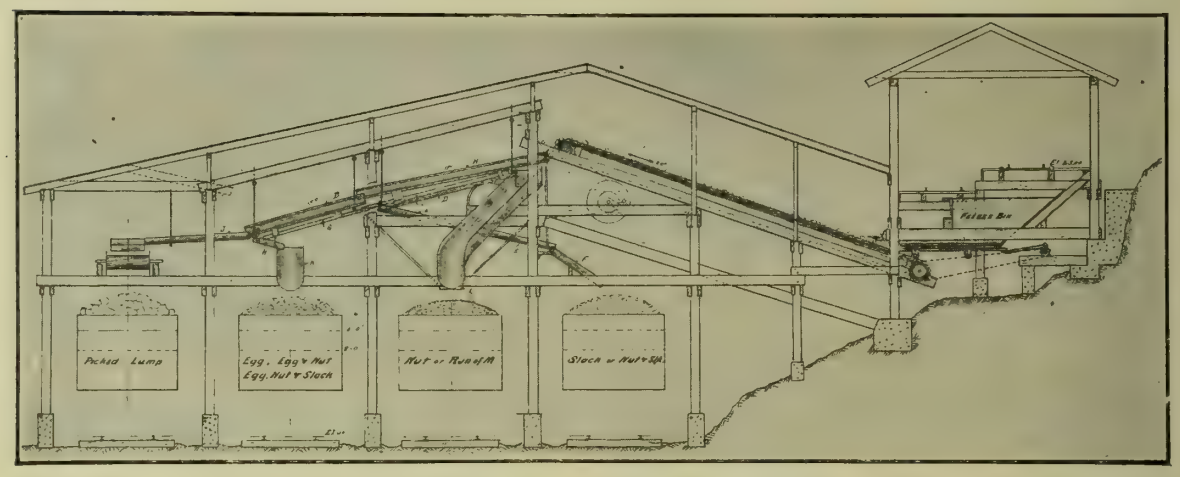
In connection with our various departments, we maintain a repair supply department from which we can furnish any special hardware for mine use. Our stock and equipment enables us to ship within short notice, Bolts, Rivets, Rollers, Drum Lagging, Iron and Steel Castings, Screen Bars, Angles, Channels, Cold Rolled Steel, Steel Bars and Plates Sheared, Punched or Forged to any special size.

Briefly, we engineer complete coal handling plants and are always pleased to submit our solution of your problems.

KANAWHA MINE CAR COMPANY

CHARLESTON, W. VA.

Kanawha Tipple Equipment



Four-Track Tandem Shaker Screens with Elevator.

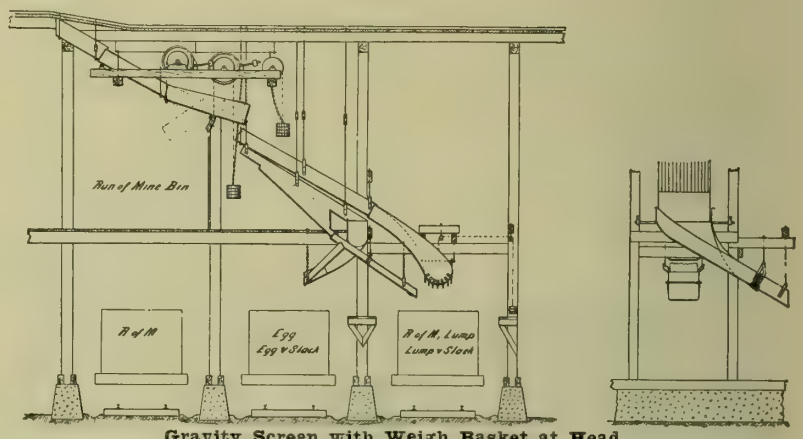
KANAWHA TIPPLE EQUIPMENT

is built from specifications furnished to the operator by our tipple engineers after a close study of the needs to be filled. In every case, whether the work is a complete tipple or only a part, your needs will be the basis of our work.

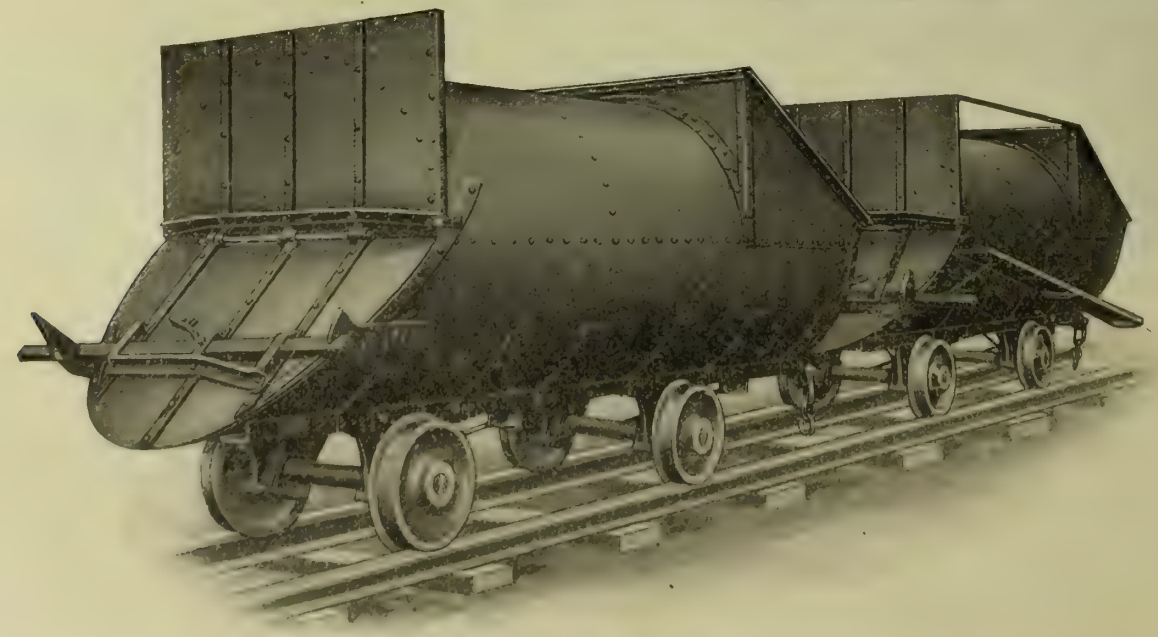
Standard, proven, reliable construction only is used in every detail.

KANAWHA COAL PREPARING MACHINERY fulfills its purpose for the reason that it is designed to handle, with absolutely no crowding, considerably more output than its rated capacity.

Send for our latest Tipple Equipment Catalog.



Gravity Screen with Weigh Basket at Head.



A Kanawha Monitor.

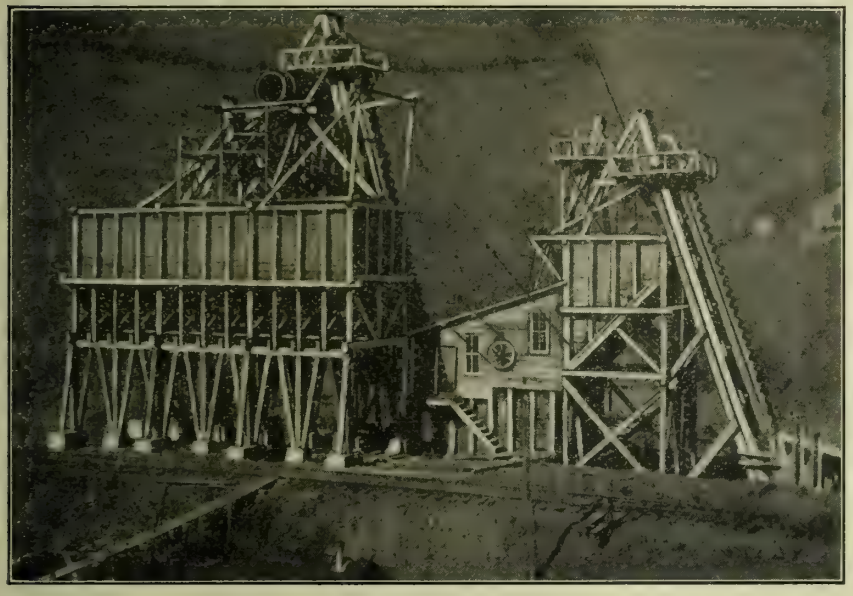
Montgomery Coal Washing & Mfg. Co.

BIRMINGHAM, ALABAMA

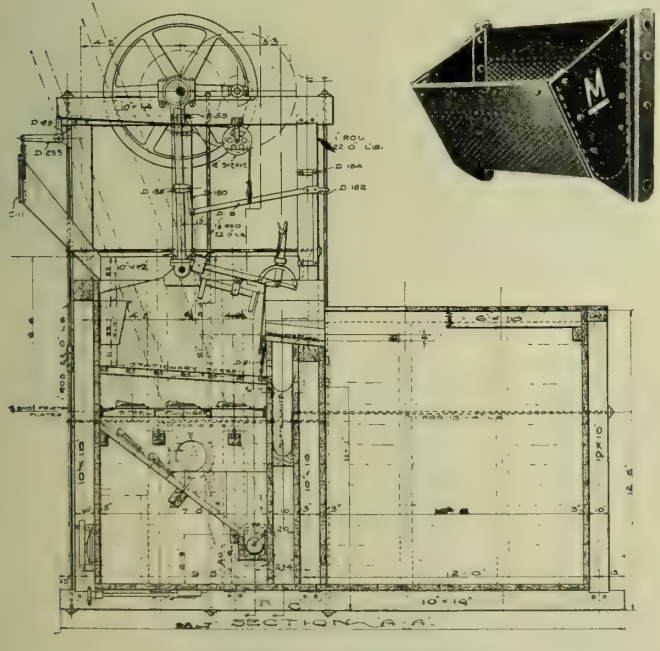
320 TWELFTH STREET.

Products

Complete Coal Washing Plants.
Screening Machinery.
Elevating and Conveying Machinery.
Steel Monitor Cars, Steel Mine Cars.
Coke Oven Larries.



Montgomery Coal Washing Plant. Built for Black Mountain Coal Land Co., Pocket, Va. Capacity, 1,200 tons in eight hours. Bin capacity, 500 tons



Cross Section of Montgomery Jig.

Some facts about the MONTGOMERY Jig. The MONTGOMERY gets a better separation and wastes less coal than any other jig. The MONTGOMERY occupies less space and uses less power than any other jig.

The Montgomery is simple in construction and easily accessible.

The MONTGOMERY requires no centrifugal pump; the water is circulated by the jig plunger itself.

The MONTGOMERY is so designed that the refuse is discharged into a separate compartment and never comes in contact with the circulating water.

Montgomery Plants are compact, rugged and accessible.

Continuous Operation.

We realize the importance to the operator of continuous operation.

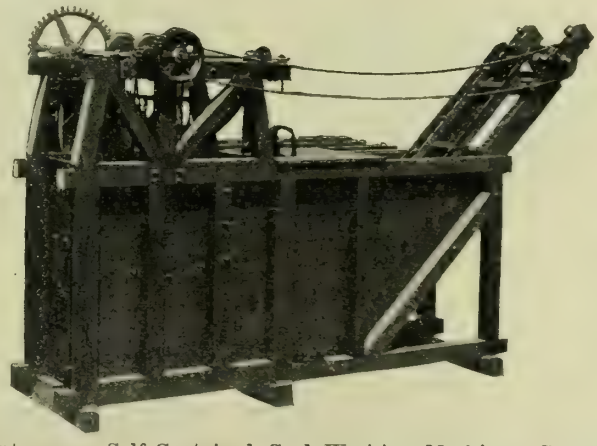
Delay versus Repair Parts.

We realize that it is delay and not the repair part which costs the operator money.

Design and Manufacture.

We realize that in order to meet the exacting requirements of the operator we must design and manufacture all of the machinery used in our plants.

We realize that our designs must be the product of years of experience and that the manufacture of our machinery must be accomplished in such a way as to leave no question of interchangeability, or of defect in workmanship or material.



Montgomery Self-Contained Coal Washing Machine. Capacity 200 tons in eight hours.

The MONTGOMERY Self-Contained machine can be used to advantage wherever a plant of limited capacity is required. The entire plant including settling tank and elevators, is fabricated and erected in our shops and shipped complete ready for installation.

Our principles of design and workmanship are applied to this machine as well as to our plants of larger capacity.



OTTUMWA BOX CAR LOADER CO.

Main Office and Factory: OTTUMWA, IOWA

Branch: HOUSTON, TEXAS.

PRODUCTS

We manufacture Complete Mine Equipment.

Box Car Loaders—
- Electric or Steam
- Stationary
- Semi-Portable
- Little Wonder
- Rocking Cradle

Steel Roof Trusses
Steel Tippples
Steel Bridges
Shaker Screens
Rotary Dumps
Automatic Dumps
Centrifugal Fans
Revolving Screens
Self-Dumping Cages
Standard Cages
Mine Cars
Self-Oiling Car Wheels
Sheaves (Bicycle)
Sheaves (Special)

Also make a specialty of fabricating equipment according to consulting engineers' designs.

DESCRIPTION OF THE STANDARD OTTUMWA BOX CAR LOADER

Construction and Operation

The Ottumwa Loader is designed to carry coal into the ends of box cars absolutely without violence. To accomplish this end the machine has been constructed as follows:

Two adjustable stands, capable of being raised and lowered, support a pair of 12″ I beams 18′ long, which in turn support the working machinery of the Ottumwa Loader. These 18′ I beams are projected forward on the stands mentioned, into the open car door by means of a heavy chain, operating on the main power shaft, and a few turns of the engine in less than half a minute automatically drive the hopper into the car, and in position for loading. This position brings the hopper at a proper elevation to receive coal from the ordinary chutes used by any mine in loading box cars.

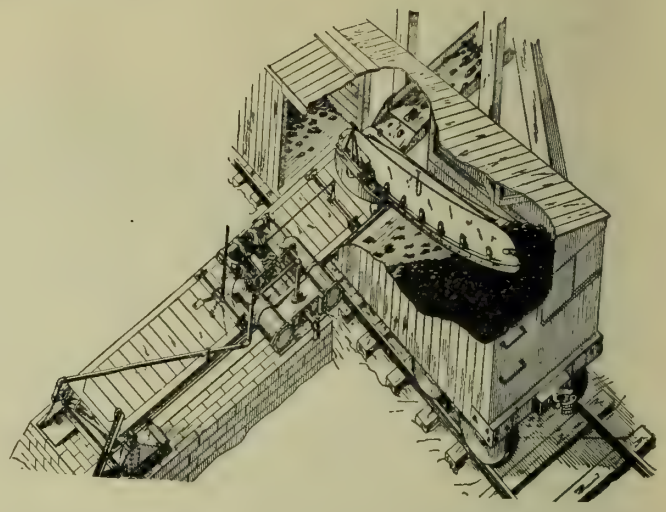
The hopper, or loading device, of the Ottumwe Loader, is 13′ 8″ over all, and may be projected almost its full length from the center into either end of the car. This hopper passes the chute with a motion parallel to the length of the car, receiving as it moves the coal from the chute. A pusher within the hopper is then propelled against this full load of coal toward the extreme end of the hopper, pushing as it moves forward the entire amount of coal from the hopper out the open extreme end into the end of the box car. This motion of the pusher is accomplished by an endless chain running around the bottom of the hopper. This chain in turn drives the hopper from one end of the car into the other end The motion just described alternates quickly, first one hopper load of coal goes into one end of the box car and the next load goes into the opposite end. The hopper makes an average of six trips per minute carrying at each trip somewhat over a ton

Engine

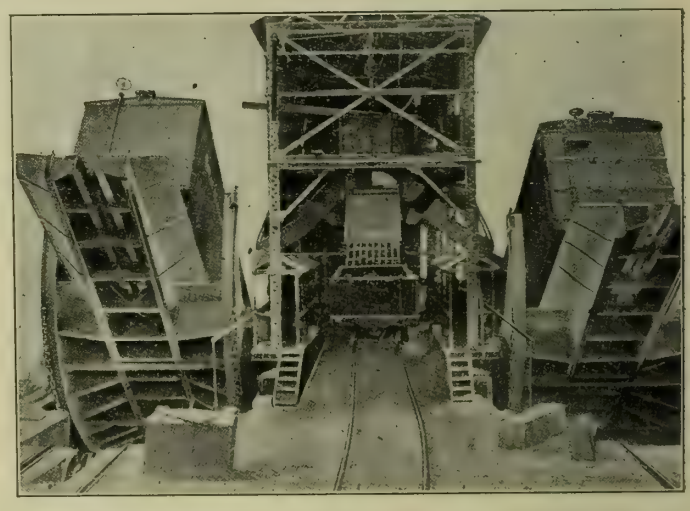
The engine used for this purpose is very heavy, and built especially for this work, consisting of two 11″x14″ cylinders and there are few small and complicating parts.

Car Puller

Between the two stands, and under the frame of the Loader, is located a cast iron drum 5′ long and 12″ in diameter equipped with a heavy gear This drum is very serviceable when equipped with a light wire rope in moving cars up or down the track in any position. This is a practical and successful car moving attachment, and is of great value and service to a mine.



The Ottumwa Box Car Loader as it appears loading coal. The hopper receives the coal as it travels past the chute and alternately deposits it in each end of the car



Double installation of Ottumwa Rocking Cradle Loaders, Crows Nest Pass Coal Company, Michel, B. C.



Rock Island Coal Mining Company's mine at Harsthorn, Okla. Steel Tipple, Shaker Screens and Box Car Loader is Ottumwa equipment.

The Scottdale Machine & Manufacturing Co.

MANUFACTURERS AND CONTRACTING ENGINEERS

Main Office and Works

SCOTTDALE, PENN'A.

Direct Representatives

CHICAGO, ILL. Webster Bldg. | NEW ORLEANS, LA. Box 625. | BLUEFIELD, W. VA. 35 Thornton Bldg.

Coal and Coke Handling Equipment

Products

Steel Tipples, Screens and Chutes, Car Hauls, Crushers, Picking Tables, Elevators and Conveyors, Coke Oven Larries, Pushers, Levelers, Charging Cars and Loaders, Mine Cages, Electric Hoists, Drums, Sheaves, Casting and Plate Work.



Coke Loader. Shaker Screens at Glen Alum Coal Co.

COAL MINES

Surface Equipment

Steel Buildings, Tipples, Rope and Chain Hauls, Head Frames, Cages of all types, Car Feeders, Head Sheaves, Shaker, Revolving and Bar Screens, Coal Bunkers, Conveyors—all styles and classes for any application, Loading Booms, Picking Tables, Hoisting Engines, Electric Hoists.



Equipments and Tipple Designed and Erected By Us.

Underground Equipment

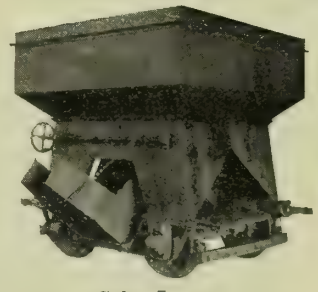
Endless Rope Hauls.

Elevating and Conveying

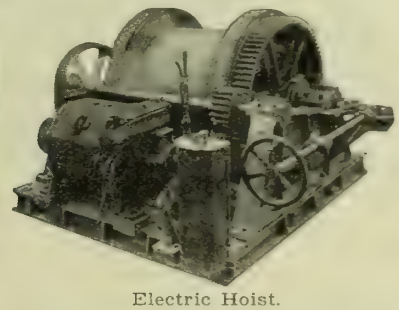
Elevators and Conveyors—all types, to meet any condition. Retarding Conveyors a specialty.

Engineering Department

Submit your requirements to us for plans and estimate of cost.



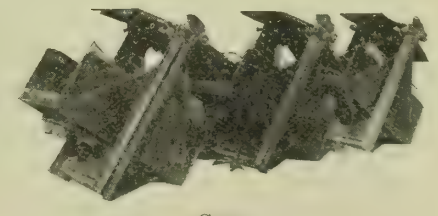
Coke Larry.



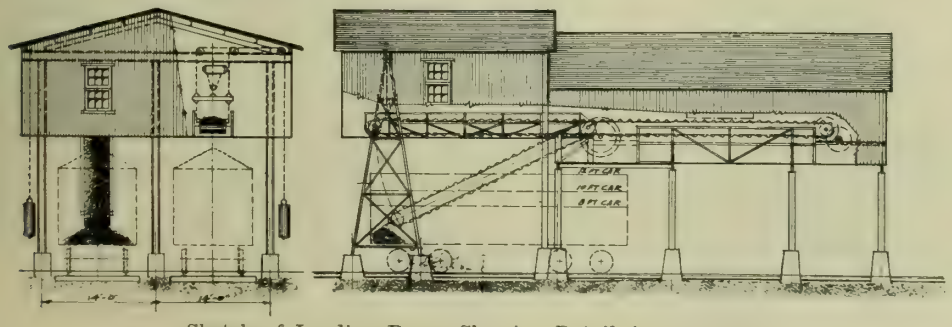
Electric Hoist.



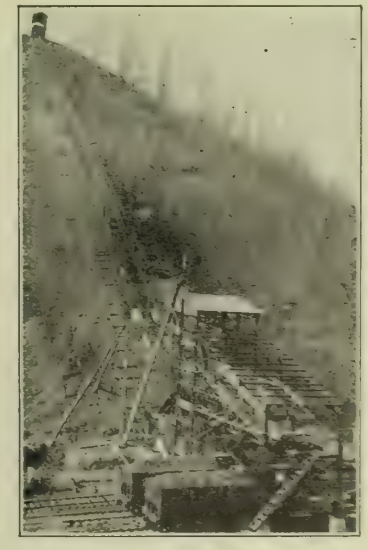
Monitor Car.



Cages.



Sketch of Loading Boom, Showing Detail Arrangement.



Retarding Conveyer and Tipple Glen Alum Coal Co.

STEPHENS-ADAMSON MFG. CO.

AURORA, ILLINOIS



A pair of "S-A" Bucket Elevators in a modern washery. The buckets are carried on long pitch steel bar link chain.

Conveying and Screening Machinery for Modern Tipples and Washeries

H. W. Oliver Bldg.....Pittsburgh, Pa.
First National Bank Bldg.....Huntington, W. Va.
50 Church Street.....New York
First National Bank Bldg.....Chicago
803 New Bank of Commerce Bldg., St. Louis, Mo.
412 East Third Street.....Los Angeles, Cal.
79 Milk Street.....Boston, Mass.
503 Dooly Block.....Salt Lake City, Utah
301 Penobscot Bldg.....Detroit, Mich.
319 Stair Bldg., Adelaide & Bay Sts., Toronto, Ont.

Products

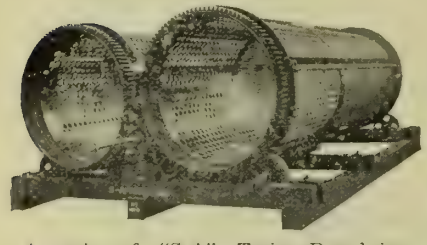
We design and manufacture complete machinery equipment for the handling and preparation of coal. This includes shaking and revolving screens, retarding conveyors, steel pan lowering conveyors, belt conveyors, chutes, coal and ash-handling machinery, car pullers, etc.

PUBLICATIONS

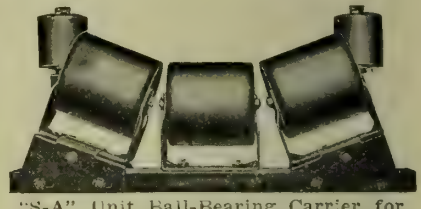
Besides our general and special catalogs, we issue a monthly "Labor Saver," describing our interesting installations. Sent free on request.



Spiral Lowering Chute, lowers from shaking screen to bin without degradation.



A pair of "S-A" Twin Revolving Screens, Style 24-T, 5 feet in diameter by 18 feet long.



"S-A" Unit Ball-Bearing Carrier for Belt Conveyors. This carrier is more economical to use than cheaper types as the rolls require lubrication but once a year or less frequently and have little wearing effect on the belt.



Typical "S-A" Belt Conveyor, equipped with "Unit Carriers".



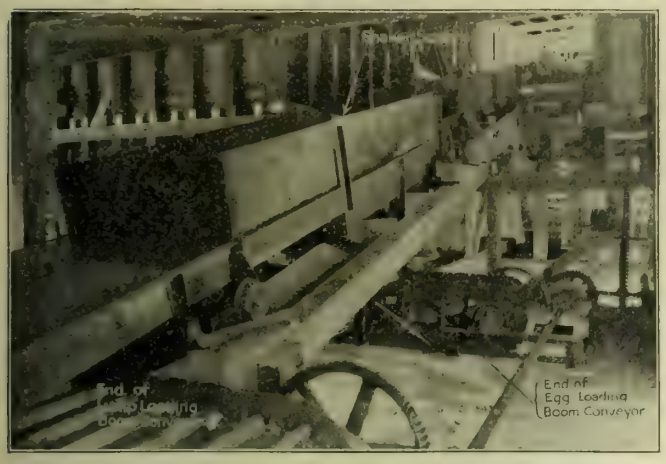
"S-A" Steel Pan Lowering Conveyor, for loading lump coal to cars without degradation. Portion of conveyor is horizontal for picking; pivoted portion is raised or lowered by electric hoist.



Tipple and Washing Plant of Thomas Coal Company, equipped throughout with "S-A" Machinery.



View of Lowering Boom of Steel Pan Conveyor, taken from top of load in car. It delivers directly to pile without dropping the coal.



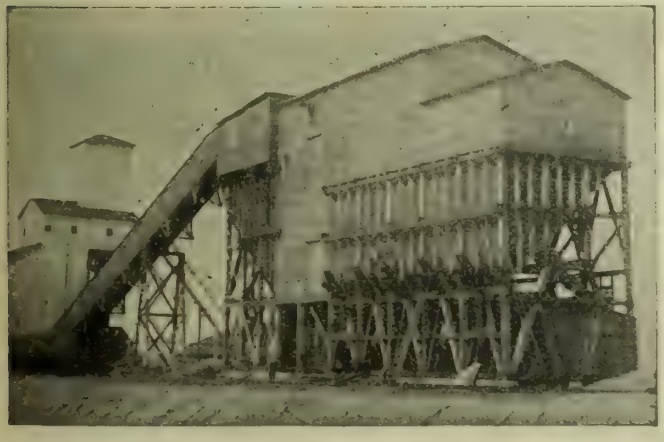
Pair of "S-A" Shaker Screens, delivering to egg and to lump-loading boom conveyors in modern tipple.



"S-A" Shaker Screen and lump-loading boom conveyors. Boom hoists are visible in rear.



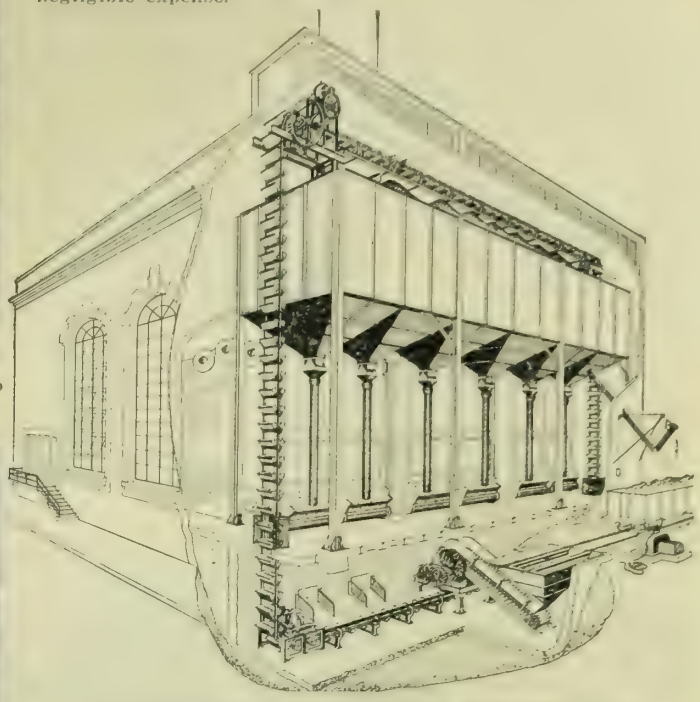
General view of Tipple and Washery, Sycamore Coal Company. Retarding Conveyor at left. Loading tracks for tipple at right. Loading Tracks for Washery beneath bins, completely equipped with "S-A" Machinery.



Tipple and Washery of Chicago Coal Washery Company. Designed and equipped by us.

"S-A" Coal and Ash-Handling Equipment for Power Plants.

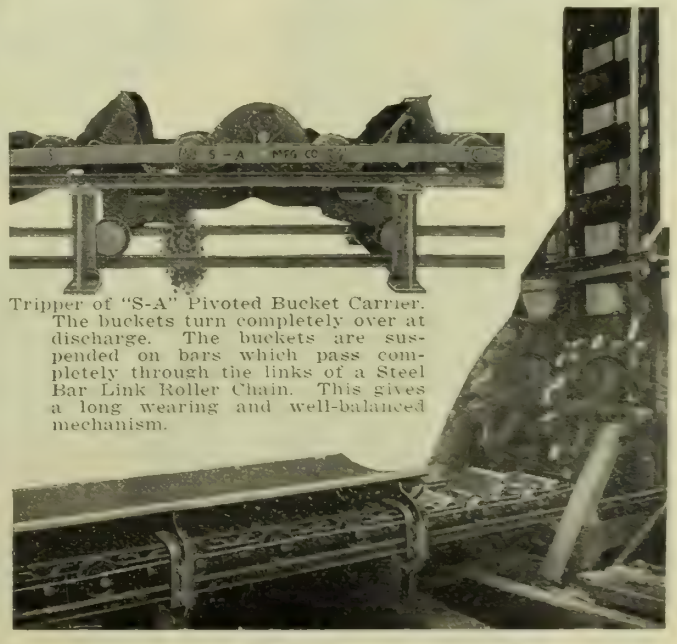
We have designed and manufactured complete coal handling equipment for the power plants of a large number of mines, enabling them to generate steam from slack coal at a very negligible expense.



A typical design of "S-A" Fueling Equipment for a modern power plant.



Drive end and tripper of an "S-A" Pivoted Bucket Carrier.



Tripper of "S-A" Pivoted Bucket Carrier. The buckets turn completely over at discharge. The buckets are suspended on bars which pass completely through the links of a Steel Bar Link Roller Chain. This gives a long wearing and well-balanced mechanism.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

Complete Equipment for the Handling and Preparation of Coal

New York.....299 Broadway
Pittsburgh ..... 1510 Park Bldg.
Boston ..... 49 Federal St.
St. Louis ....Central National Bank Bldg.
Buffalo.....698 Ellicott Square
Wilkes-Barre.....2nd National Bank Bldg.
Detroit .....911 Dime Bank Bldg.
Seattle .....580 First Avenue South
Portland, Ore. .....14th and Lovejoy Sts.
Los Angeles .....204 N. Los Angeles St.
Denver .....Lindrooth, Shubart & Co.
Minneapolis .....Link-Belt Supply Co.
Knoxville .....D. T. Blakey
Cleveland.....1304 Rockefeller Bldg.
New Orleans .....Whitney Supply Co.
San Francisco .....
.....N. D. Phelps, Sheldon Bldg.
Birmingham.....General Machinery Co.
Montreal, Can. .....
..... John Millen & Son, Ltd.
Toronto, Can., Canada Link-Belt Co., Ltd.

Products

We design and build complete Coal Tipple Equipment, Coal Washeries, Retarding Conveyors, Rescreening Plants, Shaking Screens, Picking Tables, Loading Booms, Chutes, Automatic Coal Driers, Locomotive Cranes, all types of Elevators and Conveyors, Transmission Machinery, Electric Hoists, Etc.

Catalogs will be sent to interested parties on request.

No. 111—The Handling and Preparation of Coal at the Mine.
No. 165—Coal Tipples, Retarding Conveyors, Etc.
No. 120—Peck Carrier for Coal, Ashes, Etc.
No. 79—Belt Conveyors.
No. 106—Hoisting and Conveying Machinery.
No. 200—Transmission Machinery.
No. 125—Link-Belt Silent Chain Drives.
No. 158—Locomotive Cranes.
No. 160—Retail Coal Pockets.

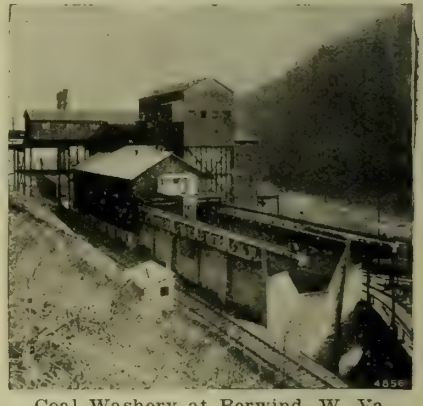
The success of Link-Belt Machinery is due to the fact that each equipment is designed by our experienced engineers, manufactured throughout in our own shops under their direct supervision, and erected by our own erecting corps, insuring personal supervision from the beginning to the completion of the work, and one responsibility.

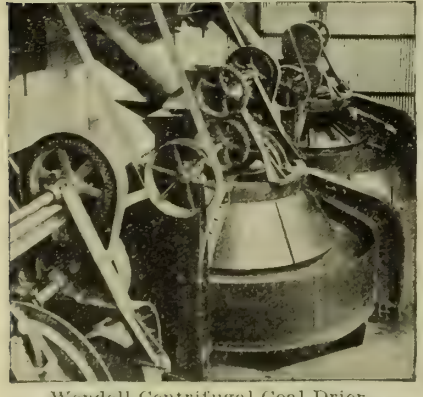
Our three large manufacturing plants at Chicago, Indianapolis and Philadelphia are equipped with the most modern machinery for the fabrication of the structural work for steel tipples, screening equipments, chutes and all machinery necessary for handling and sizing coal.

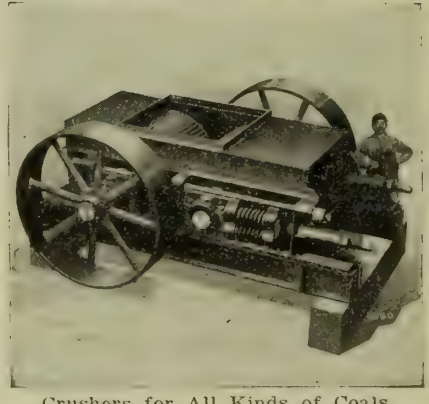
Our engineers are prepared to offer their services for the solution of all engineering problems. We are always pleased to send representatives, upon request.

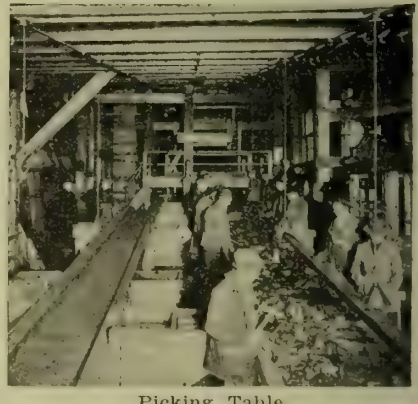

Steel Coal Tipple.


Chain Retarding Conveyor.

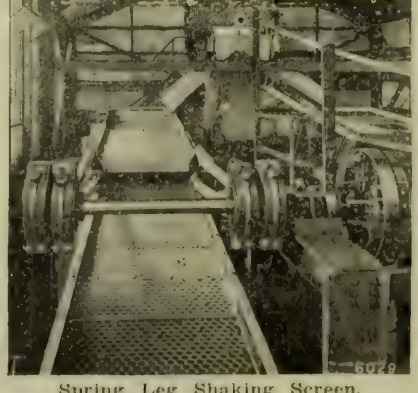

Coal Washery at Berwind, W. Va.


Wendell Centrifugal Coal Drier.


Crushers for All Kinds of Coals.


Picking Table.


Loading Boom.


Spring Leg Shaking Screen.


Shaking Screen and Picking Table.

THE WEBSTER M'F'G. COMPANY

MANUFACTURERS OF

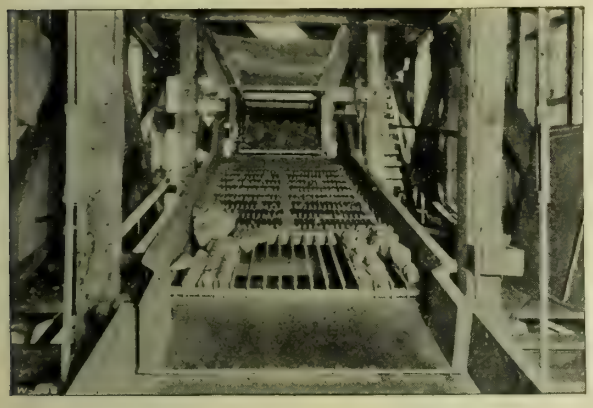
ELEVATING, CONVEYING AND POWER TRANSMISSION MACHINERY.

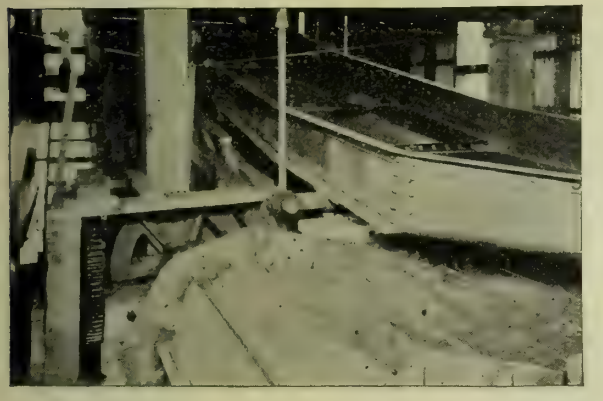
Main Office and Works: Tiffin, O.

Branch Offices: Chicago---McCormick Building. New York--90 West Street.

DIRECT REPRESENTATIVES

Philadelphia, Pa	Chas. Bond Co., 520 Arch St.	**Chattanooga, Tenn**	R. R. Nixon, Hamilton Bank Bldg.
Buffalo, N. Y.	G. A. Hancock, 80 Washington St.	**Birmingham, Ala**	G. R. Mueller, Brown-Marx Bldg.
Pittsburgh, Pa.	Dempcy-Degener Co., 14 Wood St.	**Douglas, Ariz**	L. W. Mendenhall, 1019 Avenue G
Detroit, Mich	Palmer-Bee Co., Grand Boulevard	**Denver, Colo**	C. L. Dean, 1718 California St.
Charleston, W. Va	C. L. Miller, 1511 Virginia St.	**Salt Lake City, Utah**	Utah Engineering & Machinery Co.
Middlesborough, Ky	Webster & Co.	**Los Angeles, Cal**	Cal. Machy. & Equip. Co., 430 S. Broadway
Louisville, Ky	E. D. Morton & Co., 516 W. Main St.	**Seattle, Wash**	Brinkley Supply Co., 524 First Ave. So.
Knoxville, Tenn	Webster & Co., Halston Bank Bldg.	**Vancouver, B. C**	B. C. Equipment Co., Bank of Ottawa Bldg.





Products

Machinery for handling cars and output at mines, smelters, coal yards and docks, briquet plants, and all branches of the coal and metal mining industry.

Coal Mine Tipple Equipment

Bar, shaker and rotary screens. Weigh pans and hoppers. Picking tables and loading booms. Crushers.

Car hauls and feeders. Automatic stops and feeders at the tipple dump. Car handling devices for the tipple floor or shaft bottom. Car dumps.

Elevating and Conveying Equipment

Conveyors and elevators of all types and combinations, for all purposes. Chain and sprockets.

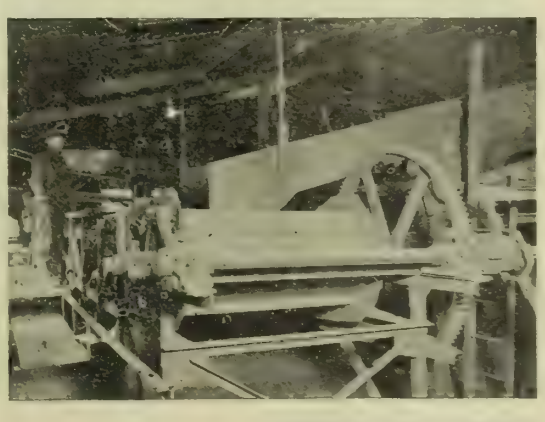
Conveyors for boiler fuel. Retarding conveyors for lowering coal from high seams.

The Webster Line

cannot be specified in small space. It is complete, for all requirements. Submit your wants to use and we will furnish plans, estimates of cost. Our engineering service always at your disposal.







ANTHRACITE SEPARATOR CO.

HAZLETON, PA.

Manufacturers of Spiral Separators for Removing Slate and Other Refuse From Anthracite and Bituminous Coal

Products

Spiral Separators for cleaning coal, pick or separate, fire clay and other refuse from coal. No power is required, as spiral is stationary, and separation automatic; gravity, friction and centrifugal forces do the work, causing no vibration to the plant. Machines are substantially built for years of operation; they reduce the breakage of coal to a minimum, and occupy a small amount of space.

The material, after being properly sized by screens, is delivered to the feed chutes at the top of the spiral, where it is divided automatically and fed on the separating or slate threads, down which it is carried by gravity, while centrifugal force slides the coal off and into the separate flanged coal thread, at the same time, frictional resistance (aided by the formation of plates) overcomes the centrifugal force and downward speed of the slate or refuse material, holding it on the separating threads until it is delivered into a separate chute at the base of the spiral.

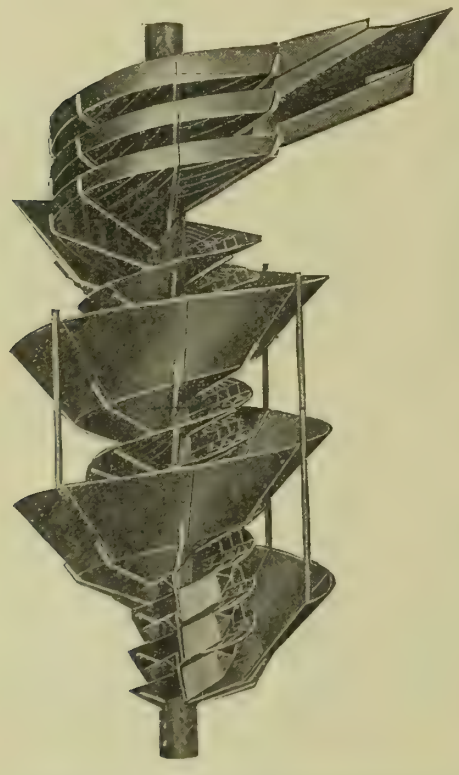
We have many spirals in use in which each machine is separating several different veins of coal, even though some of the veins have slate of which the specific gravity is higher than the coal in other veins

Capacity

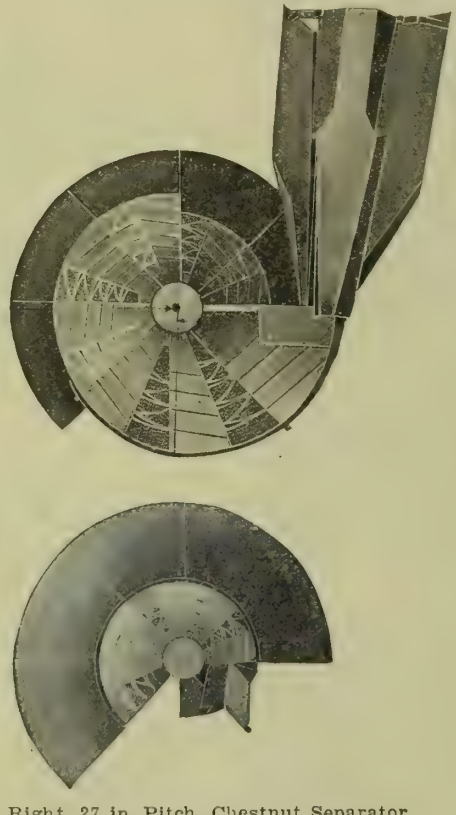
The 1912 type spiral separator has greatly improved the separation over the old form of spiral, and will separate at the rate of 6 to 8 tons per hour with greater efficiency than the old type at 4 to 6 tons per hour.

One important feature of the spiral is the ease of adjustment while in operation. Very little time is required for attention to spirals after they have been adjusted to suit conditions, but it is well to have a man learn the care of spirals so as to make intelligent adjustments and keep them in good order.

Spirals are operated under the dry method, also where the coal is washed on the sizing screens.



Right, 27 in. Pitch, Chestnut Separator, 1912 Type.



Right, 27 in. Pitch, Chestnut Separator, Top and Bottom Plans.



Spiral Chute. For Lowering Coal Without Breakage.

We also manufacture spiral chutes, or telegraphs, for lowering coal without breakage. The chutes are made so that coal will not block, but will start running or free itself upon release of outlet at bottom of spiral, even though filled with coal from bottom to top of spiral chute before being released. Send for our latest catalogue of spiral separators and spiral chutes. We have wide experience on these subjects.

The economy of spiral separation is well worth consideration as well as the making of a cleaner coal to hold the market for your trade by its use.

W. S. AYRES

HAZLETON, PA.

The Ayres Separator for Removing Slate From Coal

Manufactured by
LINK-BELT CO.

ANTHRACITE

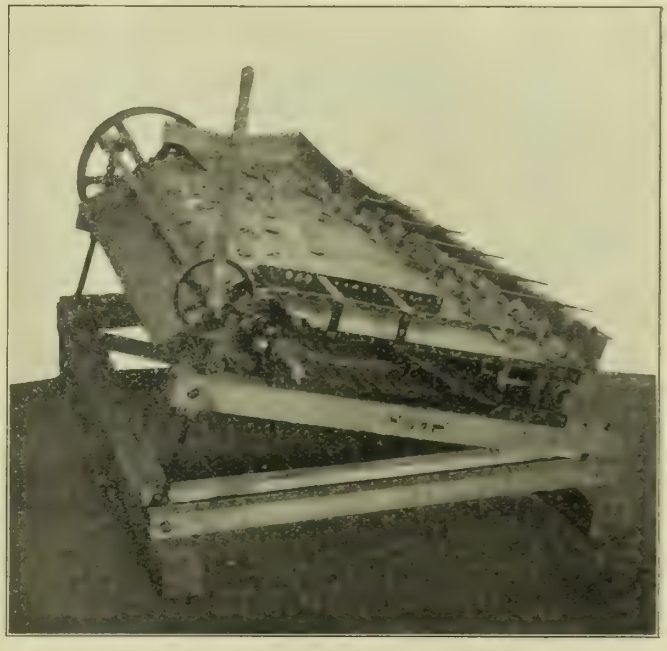
This mechanical slate-separator will let you see just what it is doing all the time.

It is adjustable while running, so that you can change the adjustment to your liking instantly.

The height of the machine is so small that the breaker building or tipple can be made much lower than is usually required.

The loss from the degradation of the size of coal, when treated by the Ayres Separator, is almost inappreciable, it being less than ½ of 1%. The coal simply slides onto the machine, slides across it, and then slides off. In all other types of separating machines this loss is a serious matter because of the rapid succession of impacts and the consequent chipping of the coal, amounting to a large percentage of the coal passing through the machine.

The saving that can be effected in this item alone by the use of the Ayres Separator, in the preparation of anthracite coal, is at least 15,000 tons on every million tons sent to market. In the preparation of bituminous or lignite coals, that are not very friable, the saving that can be effected is very much greater because they are at the same time more friable than anthracite.



Think It Over

What you can save will pay for the entire installation at least twice over in one year.

A great deal of what you have been sending to your waste bank can be put into your National Bank.

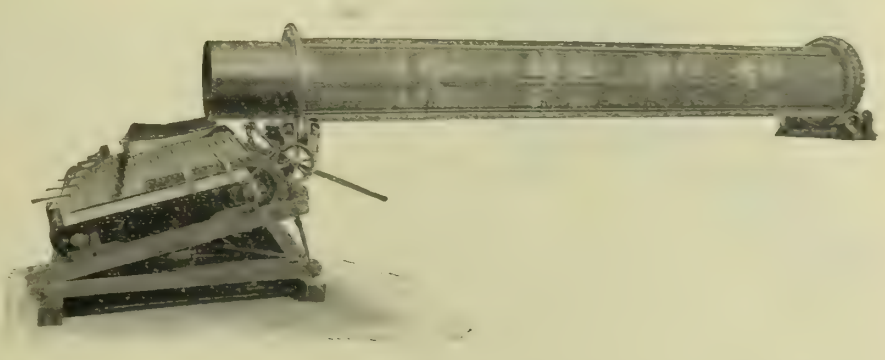
The Ayres Separator will separate either wet material or dry material equally well, but the material must be either all wet or all dry.

BITUMINOUS

For the preparation of friable lignite or bituminous coals that are used for steam or coking purposes, use the Disintegrator-Separator Process.

This process is a dry process and the coal is cleaned without any water whatever.

By installing the process at the mine, freight will be saved on the slate removed, and the coal being dry, can be shipped in winter without the risk of freezing in the cars.



The efficiency of dry coal for steam purposes is much greater than wet coal, and the time required for making coke from dry coal is much less than when made from wet coal.

Where powdered fuel is required for furnace or steam purposes this dry process of cleaning the coal before it is pulverized will supply an economic scheme of great value.

TAMAQUA MANUFACTURING CO.

Manufacturers of

Improved Machinery for Coal Handling and Preparation

Tamaqua, Penna.

The Christ Patent Jig for Anthracite and Bituminous Coal

More than 1200 of these machines have been successfully installed. They are carefully designed, and well constructed, insuring capacity, efficiency and economy of repairs.

The refuse discharge is automatic and is controlled by adjustments capable of the most sensitive and positive regulation.

The discharge elevators can be extended to any height desired. The drive is by belt or rope from Line or Counter Shaft. When so desired we make the machine direct connected to Engine or Motor.

Anthracite Jig

The accompanying cut represents our 1911 model Anthracite Jig. It is of the reciprocating pan type.

The tank is built of White Pine or Yellow Pine, well constructed and tied together with rods, and is much less liable to strains and leakage than tanks of the plunger type of jigs.

Specifications

Tank: White or Yellow Pine; 8" x 8" sills and caps; 6" x 6" posts; 3" surfaced plank sides, ends and bottom lined with ⅞" W. P. Tongued and grooved flooring.

Pan: Cast iron in one piece, without joints.

Shafting: Machinery steel.

Drive: Pulley or sheave with 10 H. P. Friction Clutch. 7" x 8" Vertical or Horizontal Engine or 10 H. P. Motor direct connected, on special order.

Elevators: Cast iron interlocking buckets for regular specification; steel perfect discharge buckets and all steel chain on special order.

Grates: Cast iron or bronze.

Eccentric Arms: W. I. Forgings with babbitted journal box; W. I. Straps and steel take-up key.

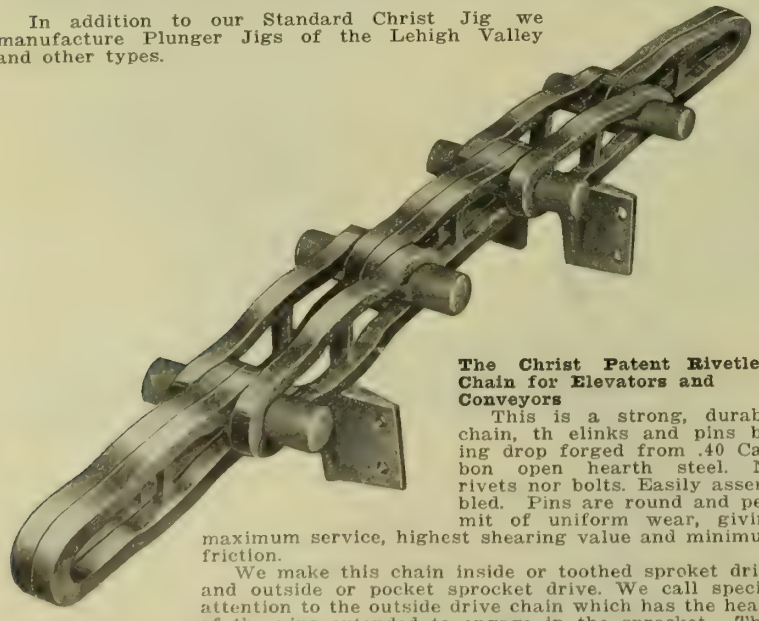
Size of Jig	Capacity Tons per Hr.	Approx. H. P. Con.	Water Gal. per Hr.	Size of Tank			Approx. Shipping Wt. Lbs.
				Length	Heighth	Width	
3 foot	8 to 12	4	300	11' 8"	6' 11¾"	5' 4½"	11,600
4 foot	12 to 16	5	400	11' 8"	6' 11¾"	6' 3 "	13,800

Bituminous Jig Washer

Our Bituminous Jig Washer is a modification of our Anthracite Jig. This machine is provided with a rear elevator for reclaiming fine materials. It is also provided with water circulating arrangement, avoiding the necessity of using pump or settling tank. General specifications are similar to those for our Anthracite Jig.

Size of Washer	Capacity Tons per Hr.	Approx. H. P. Con.	Water Gal. per Hr.	Size of Tank			Approx. Shipping Wt. Lbs.
				Length	Width	Heighth	
3 foot	15 to 20	5	450	13' 0"	5' 3"	7' 3"	18,000
4 foot	25 to 30	8	600	14' 6"	6' 3"	7' 3"	20,500

In addition to our Standard Christ Jig we manufacture Plunger Jigs of the Lehigh Valley and other types.



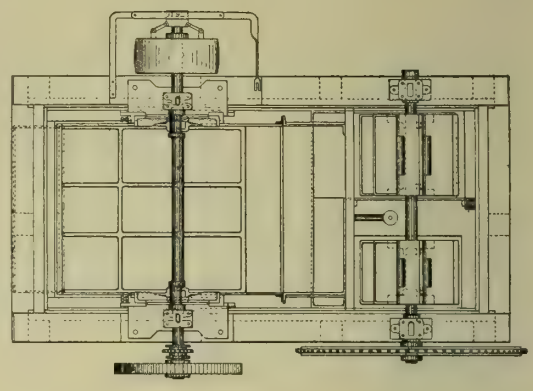
The Christ Patent Rivetless Chain for Elevators and Conveyors

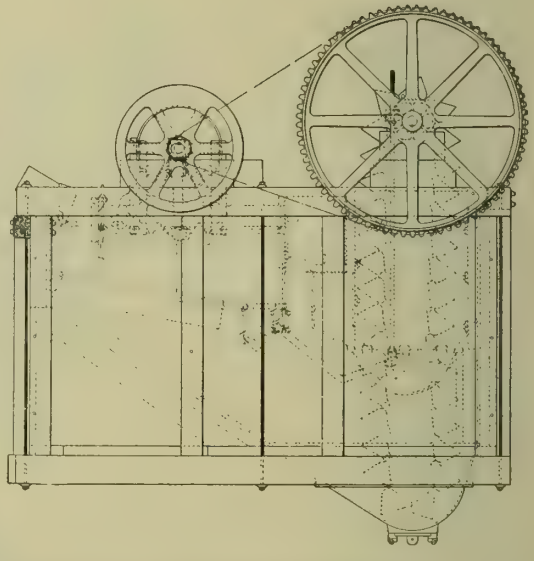
This is a strong, durable chain, th elinks and pins being drop forged from .40 Carbon open hearth steel. No rivets nor bolts. Easily assembled. Pins are round and permit of uniform wear, giving maximum service, highest shearing value and minimum friction.

We make this chain inside or toothed sproket drive and outside or pocket sprocket drive. We call special attention to the outside drive chain which has the heads of the pins extended to engage in the sprocket. This arrangement avoids the tooth wear on the backs of links, and gives more shearing value as well as less vibration to the chain.

Chain No.	Pitch Ins.	Dia. of Pins Ins.	Width of Outside Links	Width of Inside Links	Breaking Strain. Lbs.	Working Strain Lbs.	Price Per Foot. Inside Drive	Outside drive
144	4½	¾	7/16"	⅞"	48,000	9,600	1.07	1.07
121	6	1⅛	½"	½"	100,000	20,000	1.35	1.45
110	6	1⅛	⅝"	¾"	106,000	21,200	1.45	1.55
108	9	⅞	½"	½"	60,000	12,000	.90	.90
107	9	1⅛	⅝"	¾"	106,000	20,000	1.20	1.30

Attachments extra. Above prices subject to discount.





Elevating and Conveying Machinery

We manufacture a line of elevating and Conveying Machinery for light, medium and heavy duty—Riveted or Rivetless All Steel Chain and Malleable Iron Chain.

Crushing Rolls

Steel inserted tooth; manganese segment; open hearth steel segment; chilled tooth cast iron segment, and solid body cast iron.

All sizes. Simple and compound.

Screens

Shaking and revolving screens and screen bars.

Picking Tables, Chute Gates, Car Hauls, Dumps, Etc.

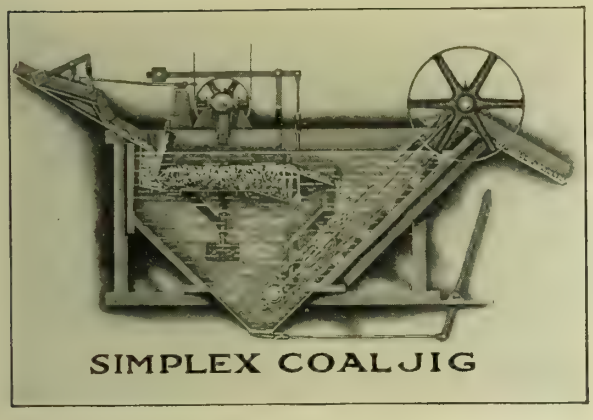
Power Transmission Machinery

We make a line of manilla rope transmission and idler sheaves, belt pulleys, journal boxes, shafting, collars, gearing, tension carriages, etc. This machinery is specially designed for colliery use.

WILMOT ENGINEERING COMPANY

HAZLETON, PA., U S. A.

Works: White Haven, Pa



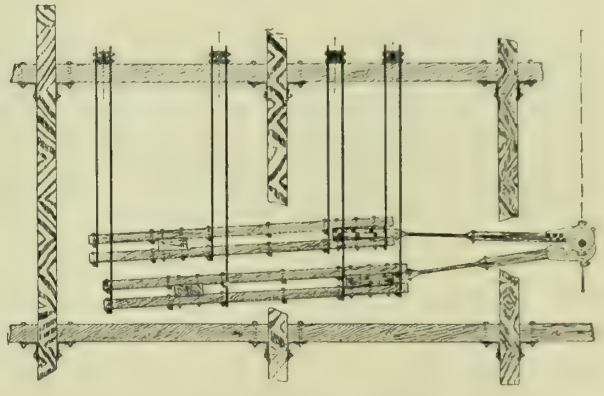
For Anthracite Coal.

This Jig is, as its name implies, simple in construction and operation, yet in the performance of its work there is none more efficient and its marvelous capacity is equal to that of larger and higher priced Jigs and the maintenance cost much lower.

The satisfactory performance in the several places it has been installed in the past year has earned for it a very enviable reputation as well as the endorsement of many mining superintendents and engineers of the anthracite coal field.

The Parrish Flexible Arm Shaking Screen

The best type of screen made for use in the coal breaker, soft coal tipples or sand and gravel installations. Less vibration and greatest efficiency of any shaker screen ever used.



The Parrish Shaker—(Patented)

Lowest installation and operating cost. Simple, strong and durable. Can safely be installed in old breakers.

Lloyd Compound Gear Driven Rolls

Correct speed, and greatest capacity. Perfect mechanical construction throughout. Every emergency provided for.

Guarantee

Maximum tonnage in prepared sizes. Minimum loss in breakage. In three sizes:

24″ Diam. x 28″ Long. 36″ Diam. x 46″ Long.
36″ Diam. x 34″ Long.

Our Hollow Ground Roll Tooth

is the last word in coal preparation and is giving very satisfactory results wherever used.



Keystone Rivetless Chains



The strongest per cross section area.
The cheapest from service point of view.
The only Rivetless Chain designed and built along straight lines, thus insuring maximum strength and minimum wear and preventing distortion of the links, and change of pitch.
Possesses all the advantages of any other rivetless or riveted chain.
Note the rugged bull-dog construction of the pin-head—a positive guarantee against acid waters, wear and tear.

Made in Drop Forged High Carbon Steel, Manganese Steel and Malleable Iron in sizes as follows:

Pitch	Diam. of Pin	Mallcable Iron No.	.40 H. C. S. Drop Forged No.	List Price Per Foot Subject to Discount. Malleable	Drop. Fgd.	Manganese	Weight per Foot	Approximate Breaking Strain
3	⅝	358		.60			5.	16,000
4	⅝	458		1.00		4.00	5.75	20,000
6	1⅛	698		1.20			10.1	42,000
9	1⅛	998		1.16			8.24	42,000
6	⅞		678		1.30		5.92	60,350
6	1⅛		698		2.00	3.50	10.72	100,000
8	1⅛		898		1.80		9.6	100,000
9	1⅛		998		1.60	3.00	8.46	100,000
9	1⅜		9118		3.00		15.7	200,000

CROSS ENGINEERING CO.

Manufacturers of

Perforated Sheet Metals

and

Coal Preparing Machinery

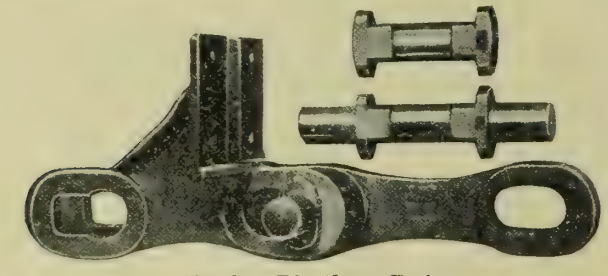
General Office and Works CARBONDALE, PA

Products

This company makes a specialty of perforated screens and plates for all purposes in all metals, such as coal, coke, stone, gravel and sand screens; filtration plates and special perforations to meet trade requirements. Our special acid-resisting manganese bronze screens and other perforated products have a reputation for accuracy and general high quality.

In addition to the above we are manufacturers of special patented devices for the cleaning of anthracite and bituminous coals and for plain and perforated elevator buckets, elevator casings, flights, trough perforated dry pipe, riveted and rivetless chains.

Rivetless Chain



Simplex Rivetless Chain.

We illustrate above one type of our "Simplex" rivetless elevating and conveying chains. This chain, connected without tools and interchangeable throughout, with reversible pins, is operative over both sprockets and tractions. Made in drop forged steel, manganese steel and malleable iron, fully described in catalogue. Ask for prices.

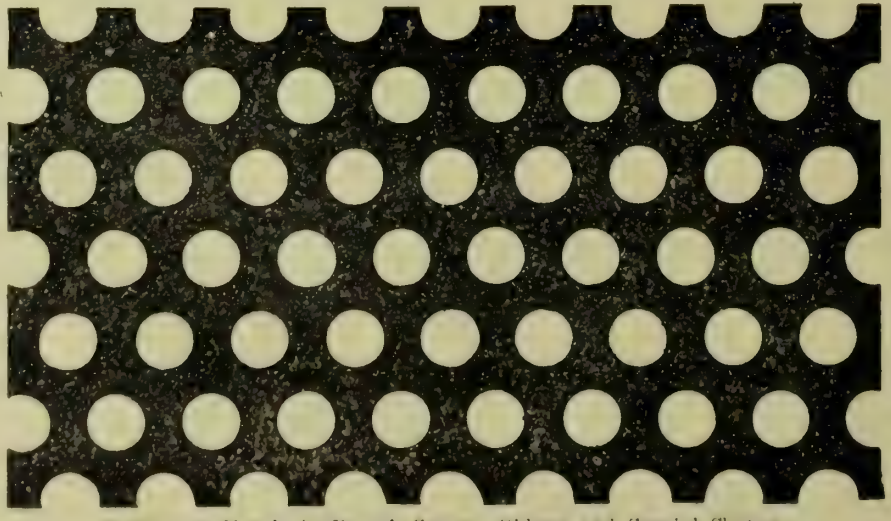
We present herewith a general schedule of perforated products and other specialties manufactured by us:

SHAKING SCREENS
CONICAL SCREENS
REVOLVING SCREENS

CROSS FLANGED LIP SCREENS.
KERRIGAN FLAT SLATE PICKERS.
MOWRY BAR SLATE PICKERS.
BAR OR "GRIZZLY" SCREENS.
REVOLVING COAL YARD SCREENS.
UPRIGHT COAL YARD SCREENS.
CRUSHER ROLLS AND SEGMENTS.
PLAIN AND PERFORATED BUCKETS.
STEEL TROUGHING AND FLIGHTS.
PICKING TABLE PANS.
MINE CARS FOR LOW VEINS.
ELEVATORS AND CASINGS.
PORTABLE FIREPROOF MULE STABLES.

We solicit the correspondence of all parties who may be interested in the above products.

We carry a large stock of blank sheets and plates, insuring prompt execution of orders. Send us your specifications.



Perforated Metals in Round, Square, Oblong and Special Shapes.

Our general catalog will be mailed to those interested, upon request. Your inquiries are solicited. Write today.

HENDRICK MANUFACTURING CO.

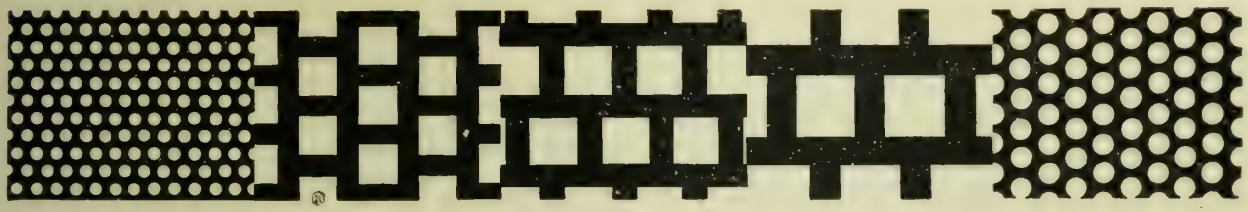
CARBONDALE, PA.

New York Office 30 Church Street

Perforated Metal Screens for All Purposes
General Sheet Iron Work

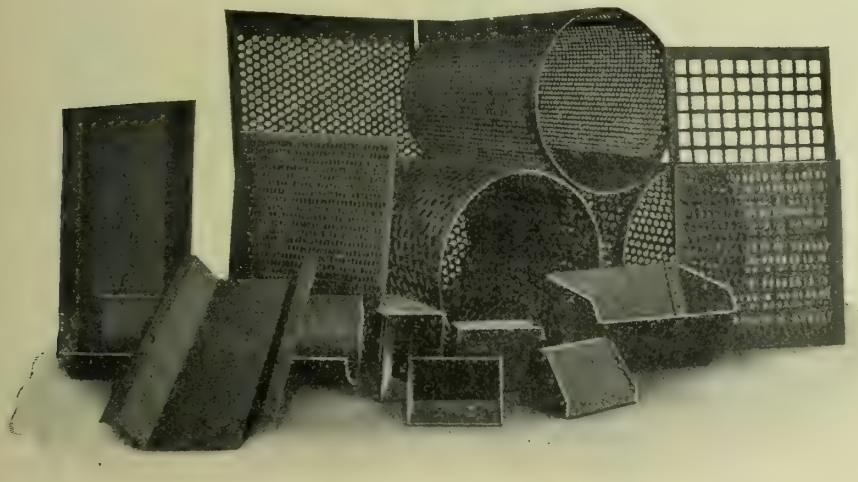
Perforators of

Iron and Steel (Black and Galvanized), Bronze, Brass, Copper, Monel, Lead and Aluminum.



Genuine Manganese Bronze Screens
for resisting the action of acidulated mine water.

Special Types of Perforated Plates
for the screening and sizing of coal and coke.



"Hendrick Products."

Revolving and Shaking Screens

We build these types of screens to your specifications.

Stock Plates and Sheets

We carry an unusually large stock of plain plates and sheets from No. 22 U. S. Std. gauge to ½" thick, inclusive, enabling us to make prompt shipment of all orders for standard sizes.

Catalog

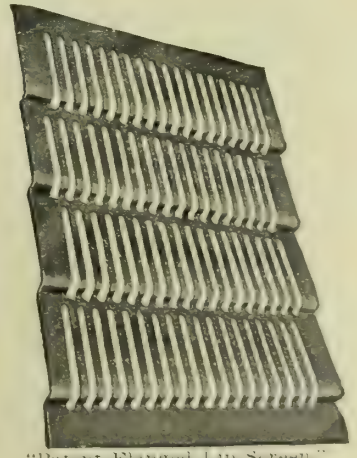
Catalog showing our products upon request.

Manufacturers of

Elevator Buckets, (plain and perforated).
Conveyor Trough.
Iron and Steel Tanks.
General Sheet and Plate Work.
Conveyor Flights.
Box Car Loading Chutes.
Smoke Stacks.
Light Structural Work.

This cut shows **Our Patent Flanged Lip Screen.** Insures perfect screening and proper sizing of coal and coke.

Write for Circular No. 21.



"Patent Flanged Lip Screen"
(Sole Manufacturers.)

We will be pleased to receive your orders or quote on receipt of specifications.

Phillips Mine & Mill Supply Co.

ESTABLISHED 1863.

Pittsburgh, Pa.

Mine and Coke Works Equipment

Agencies:

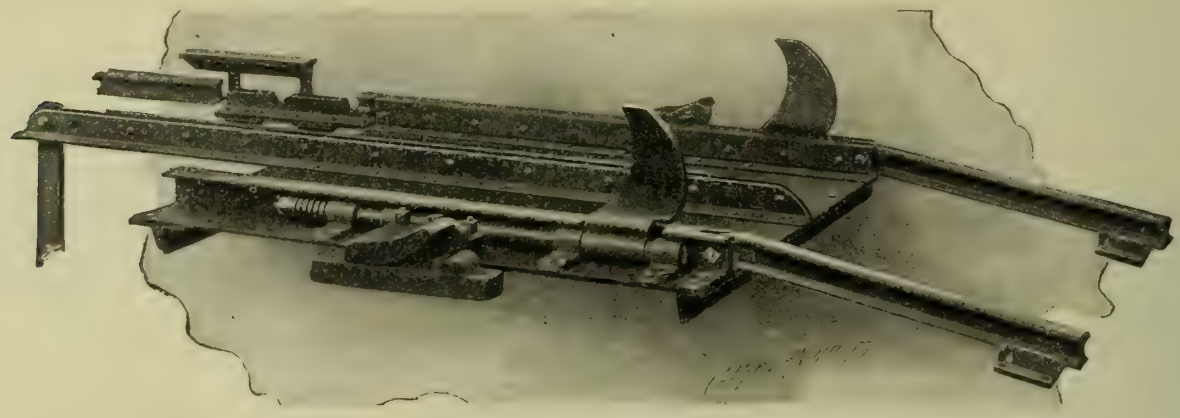
SEATTLE: A. F. Blair, C. & M. E.
SALT LAKE: Utah Eng. & Machy. Co.
HUNTINGTON, W. VA.: Miller Supply Co.
LETHBRIDGE, CAN.: J. B. Turney & Co.

Products

Mine Cars, Mine Car Wheels and Trucks, Screens and Screening Equipments, Larry Wagons, Incline Drums, Car Hitchings, Frogs and Turnouts, Automatic Car Stops and Caging Machines, and the Phillips Automatic Cross-Over and Automatic Push-Back Car Dumps.

Construction

The Dump is very substantially constructed to stand rough usage and heavy service, and it can be installed by any carpenter or mechanic from setting plans we furnish. The horn shafts are provided with heavy adjustable buffer springs, which absorb the jar caused by the loaded car striking the horns,



The Phillips Automatic Cross-Over Car Dump

This Dump is so generally known and so widely distributed that it is now recognized as the standard device of its kind, and it is used in all the coal mining fields throughout the United States, Canada and Mexico.

Capacity

The capacity of the Dump is practically unlimited, and it will handle the cars as rapidly as they can be brought to it, a number of operators dumping from 3,000 to 6,000 tons per day over one Dump, at the rate of 5 to 12 cars per minute. We have calculated that if all the Dumps we have installed of this type were run to anywhere near their capacity they could handle with ease the entire coal output of the world.

thus prolonging the life of the rolling stock, as this feature prevents wheels from being cracked or axles thrown out of alignment. The base of the Dump is a heavy steel plate to which the rails, brake pole and operating mechanism are securely attached.

The construction and price of the Dump varies with the guage of track and weight of the loaded car, and we have built Dumps to handle cars weighing from 2,500 lbs. to 15,000 lbs. loaded. In order to build the Dump and guarantee its operation, or even to quote prices, we always require a drawing of the car which is to be used in connection with it. If more than one style of car is used, a drawing or sketch of each car should be furnished.

We have built most of the up-to-date tipples in Western Pennsylvania, and are always glad to advise on contemplated installations. Your inquiries are solicited.

The Goodyear Tire & Rubber Company

AKRON, OHIO

Branches in 65 Cities

Conveyor Belting

The **price** you pay for conveyor belting of any make by no means represents its **cost.**

This must be accurately determined by figuring the price against the tonnage or cubic yards that the belt conveys in a given time.

When you buy a belt you are buying **service.** The expense is large or small, depending upon **the price of the belt per unit of work.**

Cheap belts are therefore in actual practice the most costly.

Also, you must consider this point—the consistency with which a belt **works.**

Some belts meet the tonnage requirements, but cause **costly** shutdowns, accidents, delays.

What you should demand of belting are **greatest** tonnage and **continuous** service.



Goodyear does not prescribe one or two belts to meet all conveying problems.

We claim that varying physical conditions must be **carefully weighed** in specifying **the** conveyor belt of highest efficiency f roa given service.

Yet certain fixed factors are necessary. Consider the center of the belt. Here the wear is concentrated.

To met this destructive force Goodyear Conveyor Belting is constructed with a special tough center cushion. Where wear demand is greatest Goodyear is strongest.

Conveyor Belting must stand constant strain without stretch. Goodyear has solved this problem as no one else.

And then the patented **Metler Cushion Edge.** This famous feature is found only in Goodyear Conveyor Belting. It protects the belt from abrasion and eliminates ply separation.

What do these qualities mean in minimiing plant maintenance for you?

What does ending delays—when men are idle—mean to you?

For flat conveying, for bucket elevating, there is just the Goodyear belt built to meet your specific belt needs.

Transmission Belting

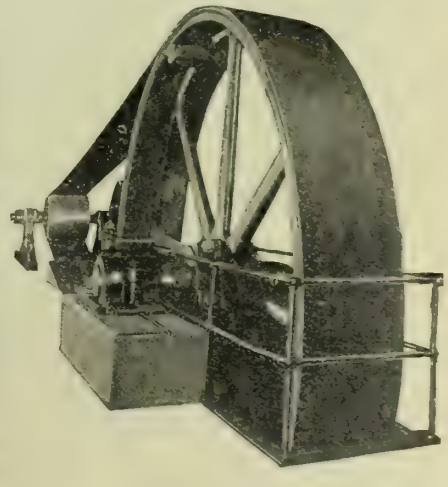
The Goodyear line of transmission belts covers every phase of power transmission in mines, stamp mills and power houses. Not only do these belts vary in the width and the number of plies, but each brand is materially different in construction.

Let us start with the main drive in the engine room and power house. Here there are three Goodyear belts—Blue Streak, Compass and Klingtite. They excel any other belts for main drive transmission work.

Blue Streak Belting **is the highest type rubber belt known.** It has grown amazingly in popularity for main drives. It has wonderful endurance and reliability. It won't stretch, slip, or hesitate under the heaviest loads.

"Compass" Branch is a friction surface Belt, built to meet unusual conditions, as well as normal. Compass has the same construction as Blue Streak, except for extra layers of rubber between the plies. This gives Compass unusual flexibility, and eliminates ply separation. For bucket elevator service, especially where the work is wet, Compass is ideal. Its construction makes it impervious to water.

"Klingtite" is a high type standard transmisison belting. It has the same construction as Blue Streak and Compass, except that lighter weight duck is used. Klingtite is ideal for main drives, or wherever heavy horsepower and unusual pulley conditions do not require Blue Streak or Compass.



We have samples ready to send you. You should get them. If we are right, it will mean belt dollars saved you this year and in the years to come.

You have nothing to lose by putting us to this test. We desire your verdict as to Goodyear belt virtues—and you should know it, too.

Simply write us for samples of flat conveyor, transmission, or bucket belting.

MAIN BELTING COMPANY

Philadelphia, Pa.

NEW YORK, PITTSBURGH, BIRMINGHAM, CHICAGO, SEATTLE

Main Belting Company of Canada, Ltd.,
Montreal Toronto

Products

Leviathan and Anaconda Belting, Main Adjustable Troughing Conveyor Rollers, Duck Brand and Blaxtick Belt Dressing.

Main Adjustable Troughing Conveyor Rollers

Where conditions permit their use, belt conveyors have many advantages over any other means of conveying coal. To sum up, their power requirements are small, maintenance charges low, less coal is broken than by any other method of handling. They have extreme flexibility in loading and discharging, while extensions and capacity increases are easily effected. These natural advantages are obvious and so generally conceded that they need not be further discussed here.



Main Adjustable Troughing Conveyor Roller.

The efforts of this organization have been given to the development of a roller which would eliminate, so far as possible, all belt wear due to the roller itself. The importance of this may be judged from the fact that in many cases with ordinary roller equipment, belt wear is caused as much by wear of the belt on the rollers as by abrasive action of the material carried.

Overly steep troughing angles, gaps at the troughing points, rigid bearings, imperfect lubrication, etc., are among the faults which undoubtedly tend to shorten the life of any belt used and which are to be guarded against accordingly.

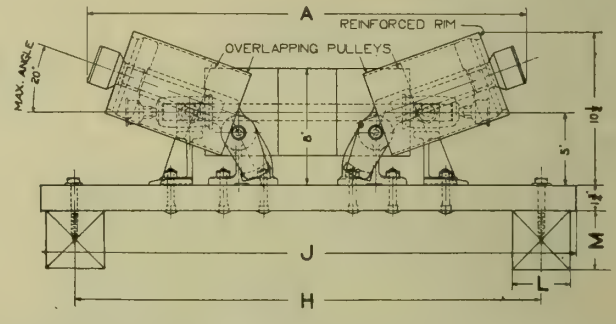
The absence of these faults in the Main Adjustable Troughing Roller results not only in increased belt service but the efficiency of the entire equipment is noticeably bettered.

Experience has shown that troughing a belt at greater than a 20° angle will not increase the carrying capacity sufficient to compensate for the accompanying extra belt wear.

The Main Adjustable Troughing Roller is therefore made adjustable with a maximum angle of 20°.

The edges of the troughing and flat pulleys overlap, the troughing pulleys being so mounted that they overlap the edges of the end pulleys, making it impossible for the belt to come in contact with the edge of the pulleys at the bending point.

The shafting of the flat roller is suspended in babbitted swivel bearings which are in turn suspended from supports and adjust themselves to any warping of the stringers. **The shaft therefore cannot bind and cause the pulleys to cease**



Main Adjustable Troughing Conveyor Roller. Line Drawing.

to revolve. A rigid roller quickly wears to a knife like edge over which the belt is dragged.

There is a comparatively long central pulley or roll to give highest possible carrying efficiency. **A large proportion of the belt runs flat** with the troughing point near the edge where the abrasive action of the material carried is slightest. This construction also steadies the belt and makes it run more evenly.

Lubrication is effected by the use of **individual compression grease cups for each bearing surface.** This gives positive lubrication and is unquestionably best adapted for the dusty conditions usually existing.

Shafting and pulleys are of the same diameter for all sizes of equipment, making necessary a very small number of parts for the maintenance of several conveyors of varying widths, and making it possible to increase capacity at any

CONVEYOR CAPACITY TABLES

Conveyors Troughed at 20 Degrees, Running at a Belt Speed of 100 Feet per Minute, with Material Fed Steadily to the Belt.

Belt Width in Inches	Max. Size of Piece in Inches	Max. Belt Speed in Ft. per Minute	Uusual Belt Speed in Ft. per Minute	CAPACITY						
				Cu. Ft. per Hour	Bushels per Hour	Tons per Hour for Material Weighing "W" Pounds per Cubic Foot				
						W=50	W=60	W=80	W=100	W=150
12	2	300	200	256	206	6	8	10	13	19
14	2	300	200	370	297	9	11	15	19	28
16	3	300	200	505	405	13	15	20	25	38
18	4	350	200	655	530	17	20	27	33	50
20	5	350	250	830	670	21	25	33	42	62
22	6	400	250	1030	830	26	31	41	51	77
24	8	400	250	1240	1000	31	37	50	62	93
26	9	450	300	1480	1190	37	44	59	74	111
28	12	450	300	1740	1400	43	52	69	87	130
30	14	450	300	2020	1620	50	60	80	101	151
32	15	500	350	2300	1860	58	69	92	115	173
34	16	500	350	2625	2110	66	79	105	132	197
36	18	500	350	2960	2390	74	89	118	148	222

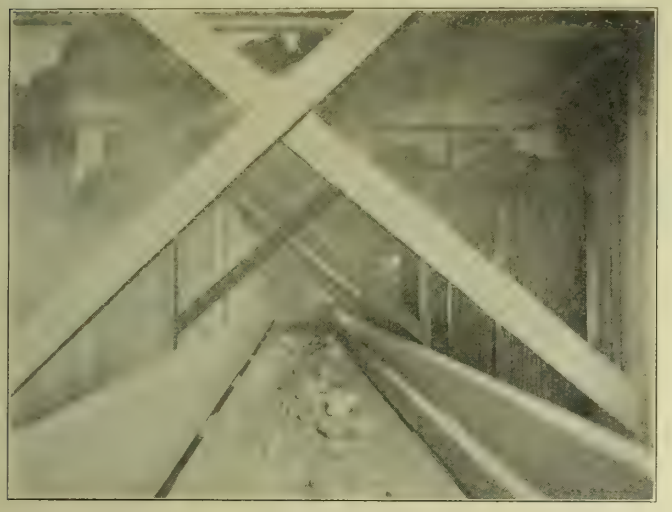
To find the capacity for belt speeds other than 100 feet per minute divide the value given in the table by 100 and multiply by the correct belt speed. If the material is fed very steadily by means of a mechanical feeder the capacity will be increased 15% to 20%.

time simply by the use of longer shafting and the additional pulleys necessary for the greater width.

These same principles are embodied in the Main Flat Carrying Roller.

Installation

When installing a belt conveyor, the entire equipment must be carefully planned to meet the particular operating conditions encountered. Since these conditions are never



475'x30"x6 Ply Leviathan, Carrying Coal on Main Adjustable Troughing Conveyor Rollers Troughed at 10°.

exactly the same in any two cases, this Company maintains an Engineering Department, composed of men who have specialized on this particular work and who will co-operate to the fullest degree in designing new equipment or in developing ways for improving present installations. This service is without cost and without obligation.

While Leviathan or Anaconda will deliver greater service than any other belts on any rollers, we are in position to demonstrate that a combination of the Main Adjustable



This 20-Inch, 7-Ply Anaconda Drives a 9-Foot Fan From a Motor in a Railway Tunnel where Dampness and Smoke Ruins Leather Belts. Ih Runs 22 Hours a Day.

Troughing Rollers and Leviathan or Anaconda belt as conditions may require will afford the highest possible conveyor efficiency.

Leviathan and Anaconda Belting

LEVIATHAN and ANACONDA deliver more belting service per dollar of cost than any other belting of any kind.

Does it make a particle of difference what a belt is made of, if it can live up to such a statement?

After all, **service** is what you buy in a belt and what you desire is the greatest possible service in proportion to cost.

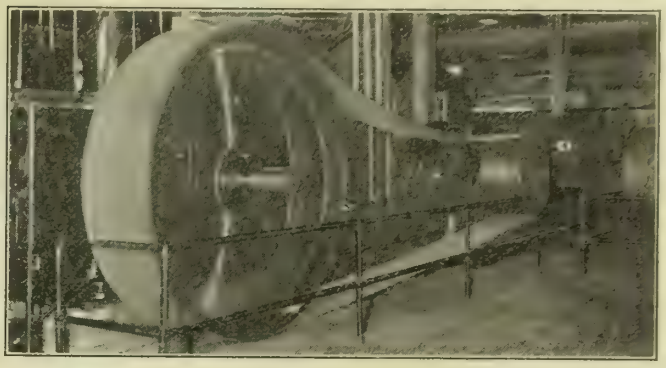
Leviathan and Anaconda combine the qualities desired in belting for all uses more completely than any other types of belt.

—They are tougher.

—They are more flexible than any other belts approaching them in toughness.

—They have less stretch than any other belts of any kind.

In addition, Anaconda is thoroughly waterproof, genuine-



52'-8" of 20" by 8 Ply Anaconda Running in a Railway Power House without Slip or Stretch.

ly heat proof as well as highly resistive to action of chemicals.

LEVIATHAN and ANACONDA are stitched canvas belts, each having its special field of usefulness. There is just one reason for their being so made. That reason is, that stitched canvas treated as LEVIATHAN and ANACONDA are treated, has proven to others, and will prove to you a greater service-ability than any other belt of any kind—rubber, balata, canvas or leather.



A Leviathan Elevator Belt. In this use Leviathan positively stretches less and delivers better service than any other belt made.

A Real Guarantee

Our responsibility for each belt we manufacture extends beyond payment until the belt has earned in actual service its full cost as compared with the service of any other belt of any kind, under the same or similar conditions, barring accidents.

ROBINS CONVEYING BELT CO.

Engineers---Founders---Machinists

Manufacturers of

Belt Conveyors; Bucket Elevators; Unloading, Stocking, and Reclaiming Towers and Bridges; Screens; Coal and Coke Crushers; Castings; Conveyor Auxiliaries

13-21 PARK ROW, NEW YORK CITY Chicago Office, Old Colony Bldg.



Cross Section of "Durabelt" Conveyor Belt.

We manufacture four brands of conveyor belts, which when properly selected, will carry material at a lower cost per ton than any other belt obtainable.

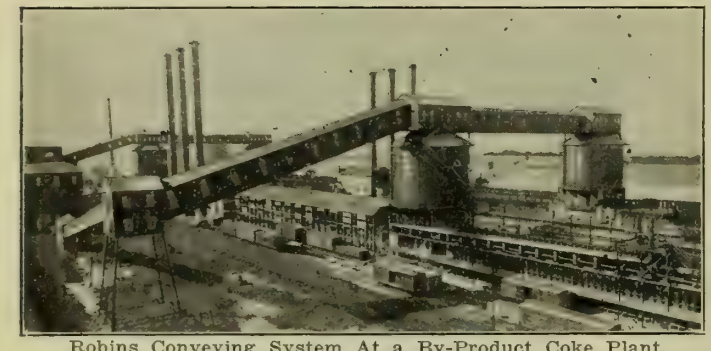
"Durabelt," with improved rubber cover and step down ply, formation as shown above. This is the most economical belt obtainable for conveying work.

"Everwear," a straight ply belt, recommended for heaviest service when a straight ply belt is desired.

"Supremus," a straight ply belt, used for heavy or medium service.

"Equator," a straight ply belt, used for light service, or heavy service of a temporary nature.

Let us assist you in selecting the proper brand and construction.

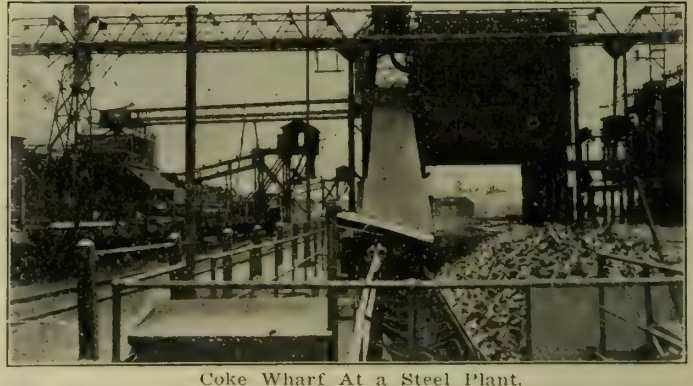


Robins Conveying System At a By-Product Coke Plant.



Conveyor Carrying Screenings From Tipple to Boiler House.

Robins Conveying Machinery is handling coal and coke in every part of the world. The component parts of the Robins System have been adopted as the standard of comparison.



Coke Wharf At a Steel Plant.



Our conveying machinery is effecting great economies in every kind of work where it is necessary to handle material.

Send for our Bulletins describing the Robins System.

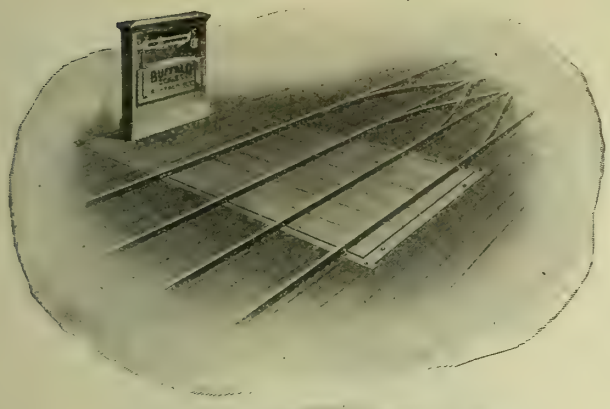


Coal Unloading, Stocking and Reclaiming Equipment.

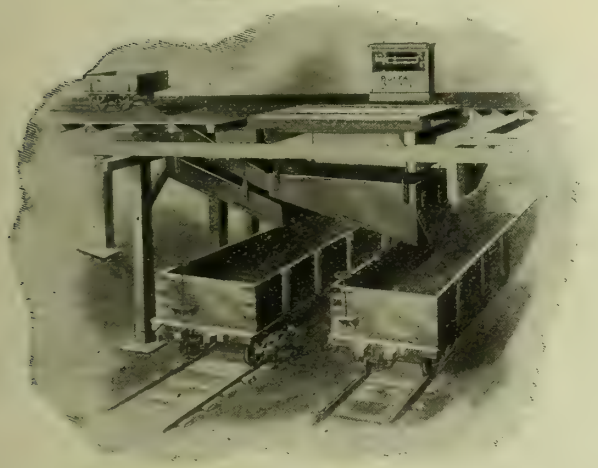
BUFFALO SCALE COMPANY

Established 1859

Buffalo Cleveland Chicago New York City



The Buffalo line includes all kinds of scales for mine and mill work except assay balances. Buffalo catalog No. 502 lists over 700 numbers. The Company invites correspondence and offers the service of their Engineering Department to those who have weighing problems to solve.

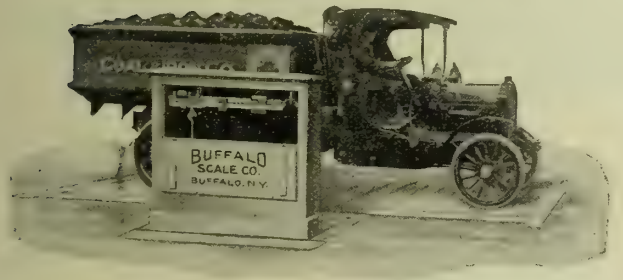


Mine Scales

for use on tipples or elsewhere to weigh mine cars may be had in all sizes, from 5′ x 2½′ up to 14 x 10 and from two to twenty tons. They may be designed for double tracks as illustrated, though single track scales are usually desired.

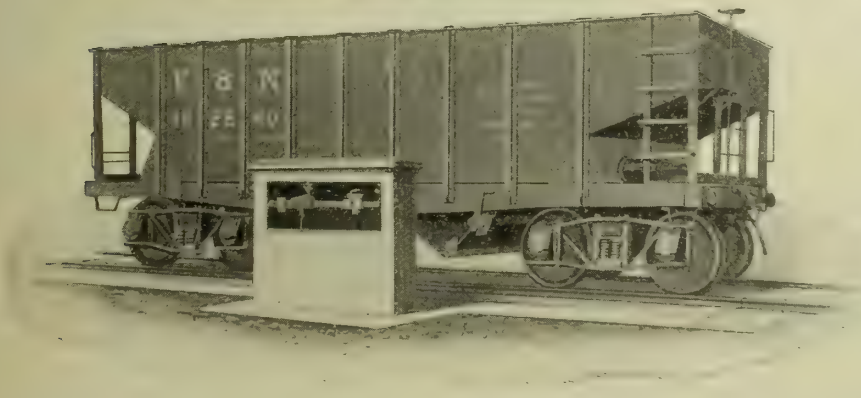
Tipple Scales

with Weigh box suspended below, are also made in all sizes and capacities. Location of weigh beams may be made to suit operation within reasonable limits.



Auto Truck and Wagon Scales

Three to thirty tons. Standard or suspension bearings. Steel or timber framing.



Buffalo Railroad Track Scales

Standard Pit Pattern—Suspension Bearing Pit Pattern—Overhead Suspension Pattern. Steel framing is recommended in all cases, though timber may be used. Full information will be sent upon request. Specifications as to length, capacity, style of beam and special conditions, if any, should be given.

Measured by requirements of American Railway Ass'n Buffalo Track Scales are 100% efficient.

FAIRBANKS, MORSE & CO.

CHICAGO NEW YORK CINCINNATI ST. LOUIS
CLEVELAND ATLANTA LOUISVILLE

Designers and Builders of

Coal Tipples Storage Pockets and Transfer or Rehandling Plants Complete Installations

Tipple Scales

The successful operation of a coal mine is dependent upon the Tipple Scale more than any other single piece of machinery. It measures the income of the miner—the output of the mine. It is the place where interests of owner and miner meet. The Scale should protect both. It can do so only through **consistent** accuracy. Fairbanks Tipple Scales, through years of faithful service have won the confidence of owner and miner alike. They offer an undoubted assurance of the success of the mine. The scales are built to meet particular weighing conditions, and are backed by men experienced in both coal weighing and tipple building. They are installed in every Fairbanks-Morse Tipple. Quick Weighing Dials are furnished if desired.



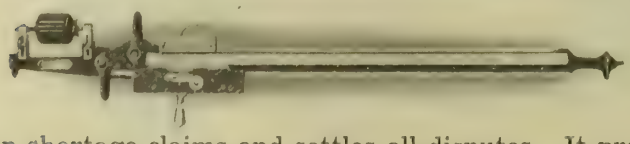
Coal Tipple designed and built by us for Central Coal & Iron Co., Central City, Ky.

Track Scales

Fairbanks Track Scales have the heavy construction necessary for accurate, reliable coal weighing service. Suspended platform absorbs all shock of car movement before it reaches the bearings, keeping pivots and bearings in perfect contact, and preventing scraping and wear.

Type Registering Beam

The Fairbanks Type Registering Beam for Railroad and Wagon Scales gives an authentic printed record of weight in multiple, that assures protection



on shortage claims and settles all disputes. It prevents all errors in reading and transcribing figures. Write for details.

Wagon and Auto Truck Scales

The accuracy of Fairbanks Scales protects owner and customer alike on every load of coal weighed.



Built in many types and sizes for every requirement.

The Standard Scale and Supply Company,

Manufacturers of

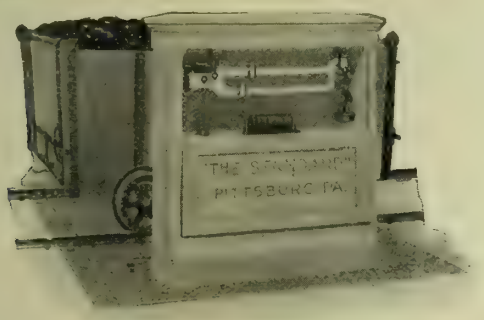
Weighing and Mixing Machinery

PITTSBURGH, PA., 243-245 WATER STREET.

35 So. Fourth St., Philadelphia; 136 W. Broadway, New York; 1547 Columbus Rd., Cleveland; 1345-47 Wabash Ave., Chicago.

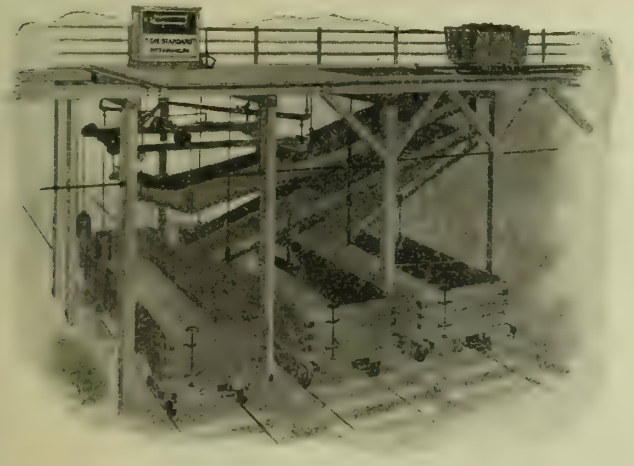
Products

Scales; Concrete Mixers; Engines, Oil and Gasoline.



"The Standard" Mine and Tipple Scale

is made in capacities of from 2 to 10 tons and platforms of any size to accomodate your mine car. Uusually furnished with a double beam, the lower bar indicating the tare weight and the weight indicated on the upper bar added to the loose weights on the counter-poise giving you the net weight of the load. Full capacity compound beams, either with or without Recording Attachment, however, are frequently furnished. This style can be erected either in tipple or on foundation in the ground.



"The Standard" Suspension Tipple Scale

for weighing coal after being dumped in the pans, is manufactured in capacities of from 6 to 20 tons regular, although larger capacities are furnished when specified. The beams furnished are of the same styles as furnished with the Mine and Tipple type. Extensions to locate the weigh beam at any distance desired and either above or below the mechanism.

"The Standard" Railroad Track Scale

is manufactured in capacities of from 6 to 300 tons and lengths of platforms running from 6 feet up. On account of the arrangement of tipples it is frequently necessary to place two or more cars on the Scale platform at the same time. We are prepared to furnish our specially heavy type where the Scale is called upon to perform particularly heavy duty or where it is necessary for a locomative to pass over it. With the lighter pattern, however, a dead-rail is usually provided. A single full capacity beam, graduated from



20 lbs. up to the capacity of the Scale, either with or without Recording Attachment, is usually furnished. Double, Triple or special beams are, however, frequently used and we are prepared to meet all demands.

General

Our line of manufacturing Scales includes practically all types for every purpose, of every style and size from the small Counter graduated down so fine as 1/16 ounce up through the general run of Express Package, Portable Platform, Dormant Warehouse, Mine, Wagon, Auto-Truck, etc., to Railroad Track of the longest platform and heaviest capacity.

Testing

A Scale, like every other machine, requires its share of attention to permit it to retain its original accuracy. As a rule, Scales of the heavier type are located out of cover, subject to weather and dirt. It should be carefully tested at least every thirty days. A supply of U. S. Standard Test Weights regularly placed upon the Scale to determine as to accuracy is advisable. To insure that your Scale equipment lives as long as it should, the Scales should be gone carefully over by a competent mechanic at least six times a year. A little adjusting when needed often avoids the necessity of frequently discarding the old and installing new equipment. Will you let us explain our plan for keeping your Scales in good shape?

Concrete Mixers

The Concrete Mixer is now in general use and an invaluable article. We manufacture a specially low charging type, to operate either by Gas, Gasoline, Oil (any heavy oil that flows) or steam engine, or with electric motor; mounted on truck, skids, or if desired to operate in the mine, arranged to mount on one of your cars. Capacities 2 to 40 cu. ft. of unmixed material per batch. Our new catalog No. 37 will be forwarded on application.

Engines

A most complete line of Gas, Gasoline, Oil and Steam Engines, for every purpose, capacities from 1 h. p. up, either vertical or horizontal type.

Scales

Our twenty-five years experience in manufacturing Scales, with particular attention being paid to the furnishing of Scales to the Coal Operator, places us in position to equip you with the right Scales for the requirements and at prices in line with the grade of Scales you need and must have.

For your file, send for our catalog No. 14, containing illustrations and list of the several hundred sizes we manufacture.

STREETER-AMET WEIGHING & RECORDING CO.

Manufacturers of

Automatic Weight Recorders

Chicago, Illinois 4101-4105 Ravenwood Ave.

It is a well-known fact that considerable trouble is being experienced in securing accurate weights at the various mines throughout the country. Errors are bound to occur as long as the human element is necessary to obtain weights.

Revenues are primarily based on weights; and to accurately determine revenue, weights must be accurately taken. No amount of careful, painstaking work in the office can compensate for careless weighing.

The Streeter-Amet Recorder is a device that will make careless weighing almost impossible. Its chief value lies in the fact that it eliminates the human equation from the problem of weighing. It automatically weighs and mechanically records, depending for the accuracy of its work only on the uniformly exact operation of carefully made mechanism.

With the use of this device cars can be weighed in motion at a speed of two to three miles an hour. The machine requires no attention further than to see that the supply of tape is maintained, and that the tape motor is wound once or twice each day.

The weight is clearly printed on a tape, three weights being visible at all times. There is no chance to forget, as the printed record is in plain view.

These recorders are substantially built of the best material by first class workmen. The jar of the tipple does not effect their accuracy or durability. Repairs are seldom necessary. Many of the recorders in service have had no repairs since their installation.

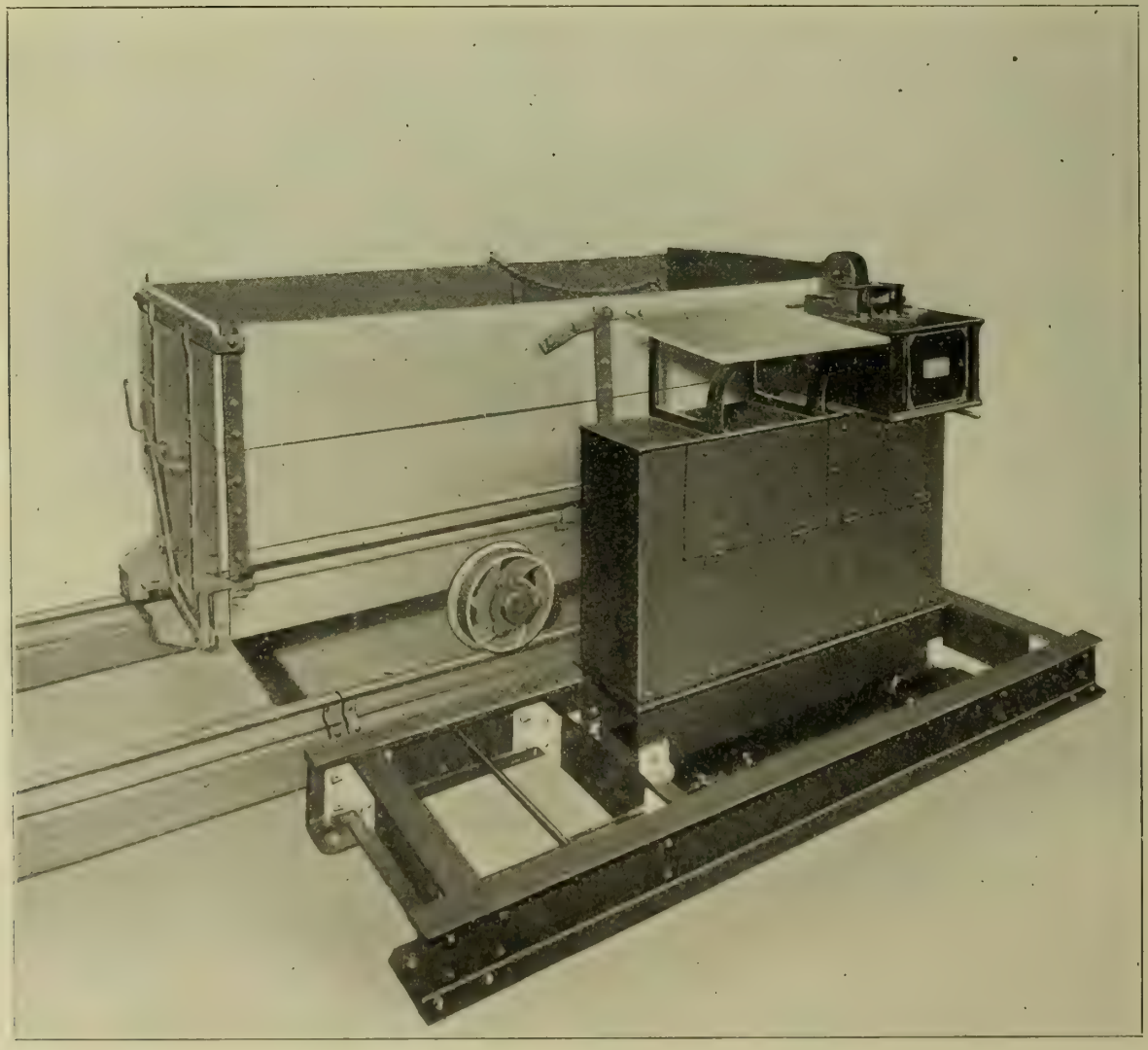
The recorders can be attached to any make of scale, provided capacity and design are suited to the work to be done.

An efficient department is always ready to solve any difficult weighing problems.

Special recorders constructed on request.

Consult us when making new improvements.

Complete descriptive circular mailed on request.



Winslow Government Standard Scale Works, Inc.

Manufacturers of

RAILROAD TRACK SCALES

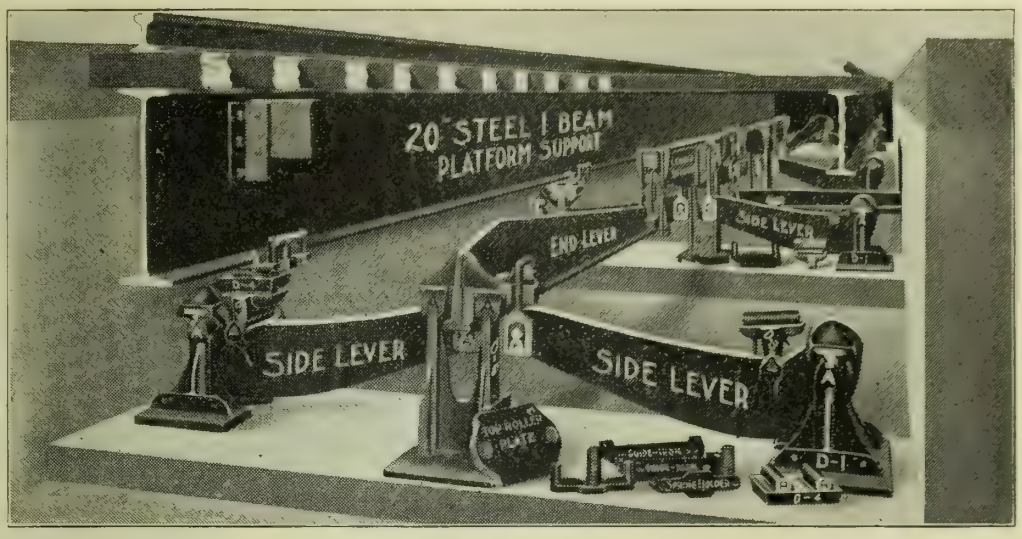
Terre Haute, Indiana, U. S. A

Products

We manufacture all sizes of heavy Scales, from one ton to 325 tons capacity.

NOTHING SUCCEEDS LIKE SUCCESS.

No amount of shock can produce any slipping or scraping of the knife edge bearing on the surfaces with which they come into contact. An exclusive patented feature of WINSLOW GOVERNMENT STANDARD SCALES.



THIS IS, FOR THE PRESENT DAY AND AGE, THE BEST RAILROAD TRACK SCALE THAT BRAINS AND MONEY CAN PRODUCE. WHY?

First—IT IS THE STRONGEST.

Second—IT IS THE SIMPLEST.

Third—IT IS THE MOST DURABLE.

Fourth—IT IS ALWAYS ACCURATE.

The pressure on each knife edge bearing is evenly distributed throughout the entire length of the bearing. Another exclusive patented feature of WINSLOW GOVERNMENT STANDARD SCALES.

We manufacture these scales in all capacities from 80 tons to 325 tons.

Straight Lever Wagon Scale

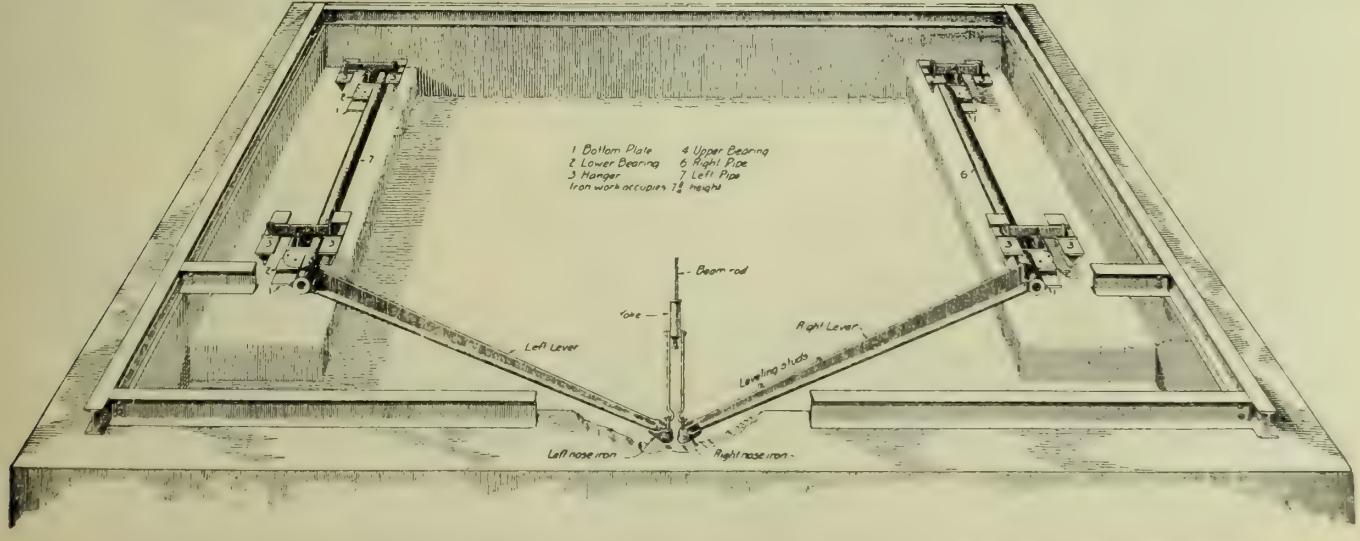
We also make a STRAIGHT LEVER WAGON SCALE. All main levers of this scale are of the same multiple, and no one lever is dependent on the other for support.

We make wagon scales in any capacity from four tons to thirty tons.

Our Guarantee

We guarantee all of our scales to fully meet the requirements of the American Railway Association specifications.

Will you give us an opportunity to convince you that we are making the best scale on the market?



The Above is a Cut Showing Our Round Lever Wagon Scale Set on Concrete Foundation Using Steel Frame.

Christy Box Car Loader Company

Des Moines, Iowa

Box Car Loaders

Car supply is one of the most important factors in the operation of a coal mine—and often one of the most provoking. An inadequate supply of gondolas, causes much delay, loss of time and money.

With a Christy Box Car Loader at your plant you can utilize box cars as well as gondolas and the coal shipped in a box car has many advantages over the ordinary method.

First—In eliminating short weights, caused by loss in transit by jolting and jarring and loss by theft.

Secondly—In protection from the elements, which cause air slacking, excessive moisture, freezing, etc.

Christy Box Car Loaders are built to save you money. Our machines have been great money makers at mining plants in all parts of the United States and Canada.

Their operating principle and construction is very simple, thereby producing economy of first cost, operation and maintenance.

The coal to be handled is kept constantly in motion, thereby eliminating all delays, rehandling and wear and tear on the machine, and assuring a maximum loading capacity, low maintenance cost and a big saving in power.

Our machines are mechanically correct and are built for service.

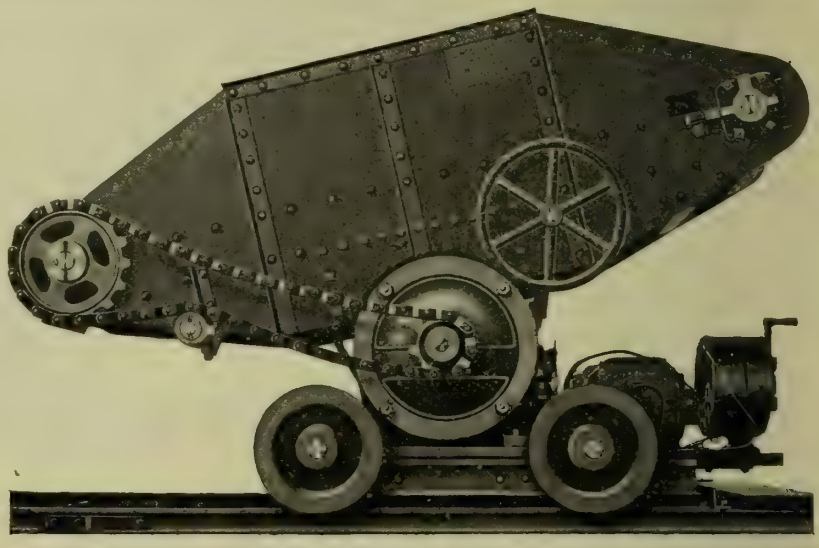
They load the coal in splendid condition, require no shovelers, and place the coal just where desired until the car is loaded to the roof and to capacity.

The types of machines shown herewith represent only a few of the designs we manufacture.

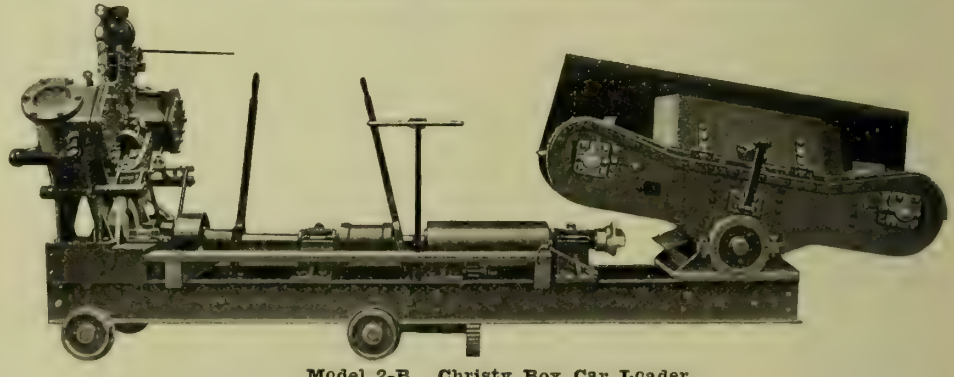
Our line of Loaders includes several types of both stationary and portable Loaders to be operated by either electricity or steam. Explain briefly your loading conditions as to power used, amount of material to be loaded per day, and we will gladly supply full data of the type machine we consider best adapted to your use.

We are the only people that give the loader business undivided time and attention. We give the very best service and therefore respectfully solicit your box car loader inquiries.

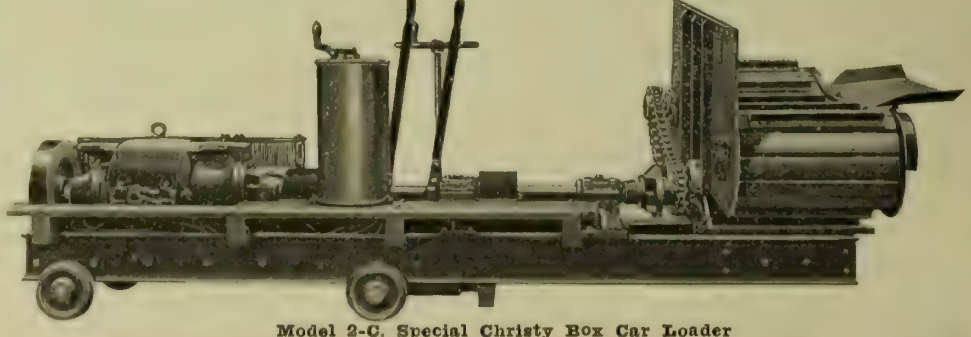
THE MODERN WAY IS THE CHRISTY WAY.



Christy Peerless Box Car Loader.
Entire machine enters car. Notice the first motion drive direct from armature shaft. No driving gears or friction clutches. Also note counter balanced tilting conveyor.
COMPACT—SIMPLE—DURABLE—ECONOMICAL.



Model 2-B. Christy Box Car Loader.
Improvements include first-motion engines having mechanical reverse without troublesome link motion, steam separator, direct power drive without driving gears, counter-balanced tilting conveyor, one-third more tee conveyor slats.
SIMPLE—ECONOMICAL—DURABLE—UNLIMITED CAPACITY.



Model 2-C. Special Christy Box Car Loader
First motion drive direct from armature shaft—no driving gears or friction clutches. Power saving of 25 per cent. Maintenance cost reduced 60 per cent. Does not break coal. Does not damage cars. Loads cars to capacity without help of shovelers. Not necessary to put coal in car doorways.

Manierre Engineering & Machinery Co.

Manufacturers of

BOX CAR LOADERS.

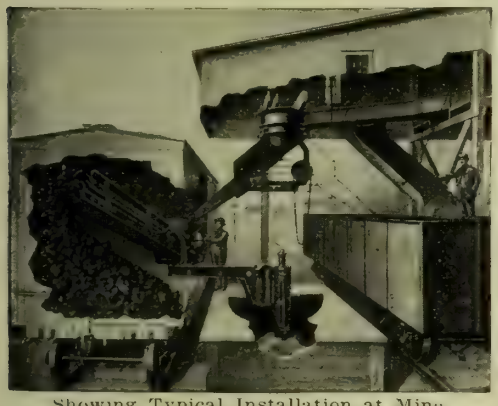
Milwaukee, Wisconsin

Description of Standard Manierre Box Car Loaders

The long reach Manierre box car loader differs from other loaders in that it is a conveyor. The coal is carried on a belt or steel apron and is not thrown at all. The conveyor can be tilted so as to minimize any drop, and the new Manierre extension type loader extends 18 feet from the center line of the car door, thus reaching to the extreme end of any box car. Coal six inches or under is turned in the direction of the belt as it comes from the chute, to reduce breakage. The center of the car can be filled by this loader. Thus every detail of the Manierre is planned to reduce breakage. The construction of the loader is simple. It is easy to operate. It is moved by hand, and is supported on two hinged arms journalled to ball and roller bearings. The conveyor frame carries the motor which is connected by roller chain to conveyor drive pulley. It occupies little space, and can be installed under the most difficult conditions. Below are some specifications for coal loading and descriptions of standard Manierre arrangements.



Illustrating Loader Tipped Down So As to Minimize Fall of Coal.



Showing Typical Installation at Mine.

Specifications for Coal Loading.

Name	Horse Power	Capacity 30 ton cars per hour	Belt Speed	Arm Lock	Tilting Gear	Jack 18 or 12 Adjust.
16" Belt	5	3 to 4	400-1000	Without	Hand oper.	Without
24" Belt	7½	4 to 6	400- 800	Without	Hand oper.	Without
24" Steel Apron Ldr.	15	6 to 8	400- 800	With	Power oper.	With

STANDARD ARRANGEMENT.

1—Single acting loader on same side of car as chute with loader standing in off position at right angles or parallel to car with arms swung above operating platform or inverted. Operates in connection with our standard chute, having side to side motion and moved in and out by chain wheel.

2—Double acting loader loading on either side between tracks spaced preferably 19′ centers. Chute same as the single acting except that it can be turned 180 degrees from one track to the other. Double arrangement saves time of spotting cars also makes it possible to fill center of loaded car with chute while loader is being placed in other.

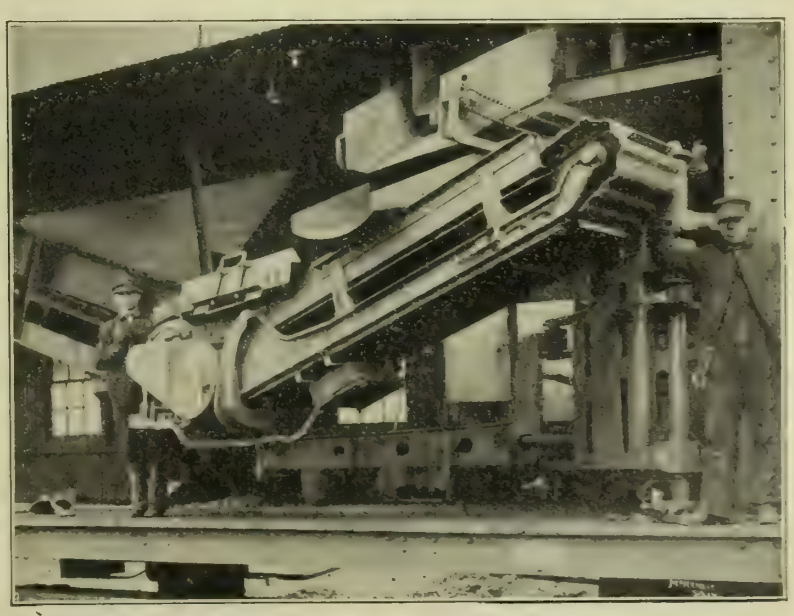
3—Loader installed with long arms so as to take coal from chute coming in on either or both sides of car.

4—Single acting loader with chute arrangement to load open cars on one track while changing box cars on a second track; thus saving time lost in spotting cars.

5—Portable loader hand traversed or equipped with traction motor to pull 6 loaded 30 ton cars. If chute is on loader side, chute can be carried on car with hopper and screens to load in connection with steam crab or under line of pockets.

6—We design loaders to meet special needs.

"SIX FIRMS USE THIRTY-ONE MANIERRES."



Steel Apron Loader for Large Lump Coal.

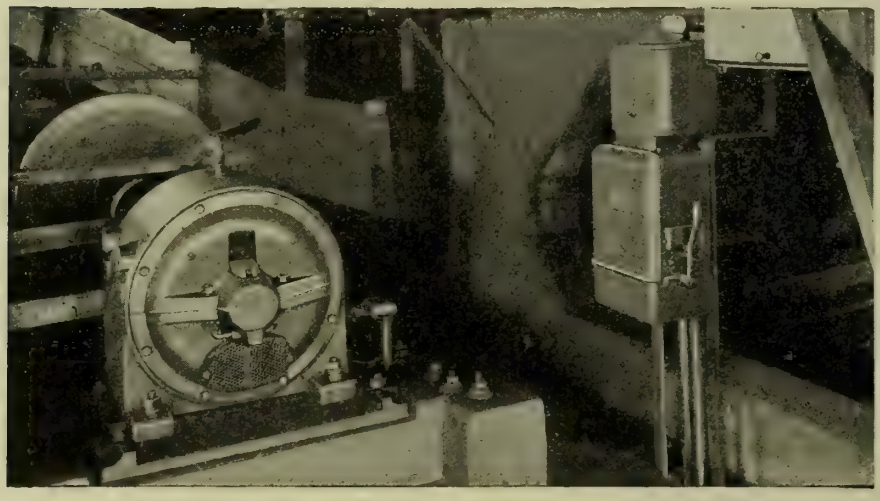
GENERAL ELECTRIC COMPANY

General Offices: Schenectady, N. Y

The Guarantee on Goods of Excellence Electrical

Sales Offices In All Large Cities

Electrical Equipment for Mines



Mine Type Induction Motor, Driving Breaker Machinery, D. L. and W. Coal Co.

Mine conditions are more severe than those met in any other branch of motor application. For this reason the General Electric Company, in collaboration with leading mine electrical engineers, has developed a complete line of alternating and direct current motors which can be supplied for every mine requirement. These motors have the following important features:

High starting effort and large capacity for severe overloads. Open slot windings protected with moisture resisting insulation. Unusually strong mechanical construction including extra heavy shafts. Semi-enclosed self ventilated with large ventilating end ring surface. End shield can be removed without disturbing back shaft. Extra large bearing surface on shaft for rotor spider. Furnished with or without one piece back gear bracket. Back gear bracket attached to frame by four widely spaced bolts.

MINE TYPE INDUCTION MOTORS.

Type H I Form K
10 to 75 HP. 60 Cycles.
220, 440, 550 Volts.

H. P.	Speed Synchronous	Approx. Shipping Wt. Motor and Comp.	Approx. Shipping Wt. with Back Gear and Comp.	Full Load Speed.
10	600	1700	3040	555
15	900	1560	2640	850
15	600	1910	3200	560
20	900	1740	3040	845
20	600	2640	4490	555
25	900	1910	3200	860
25	600	2640	4490	560
35	900	2740	4590	865
35	600	3140	5240	565
50	900	3140	5240	855
50	600	3400	5540	570
75	900	3530	5670	860

Note—Above ratings can also be furnished as Form M—for Variable Speed.

WESTINGHOUSE ELECTRIC & M'F'G CO.

EAST PITTSBURGH, PA.

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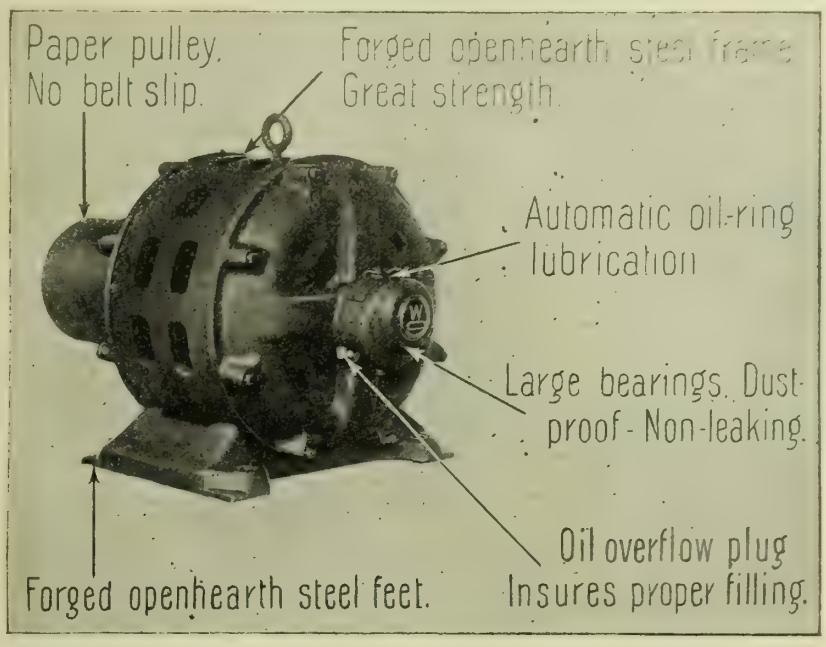
*W. E. & M. Co., of Texas.

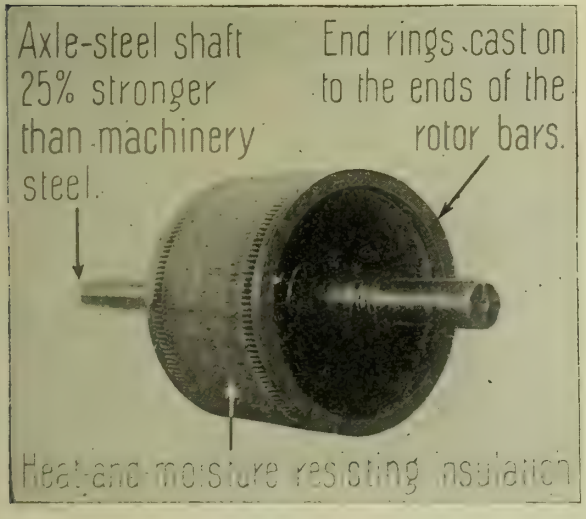
Products

Electrical Equipments for all mining apparatus.

Westinghouse CS is the best motor for driving:

Tipple Machinery
Conveyors
Crushers
Dumpers
Fans
Pumps
Shaker Screens
Tools
Washers





"The C S for Mine"

is always the answer of the Superintendent or Manager who has used one, because it has—

1. Indestructible Rotor
2. High Efficiency
3. Open slots for primary coils, permits quick repairs.
4. Form wound coils above 5 horsepower, permits quick repairs.
5. No wearing parts but the bearings and they last for years.

RATINGS—60 CYCLES—2 OR 3 PHASE

FOR 220 OR 440 VOLTS.

H. P.	APPROX. SPEEDS AT FULL LOAD.				
2, 3	1730	1130	850		
5, 7½, 10, 15, 20	1750	1150	870	700	575
25, 35, 50, 75, 100	1750	1150	870	700	575
150, 200,	1750	1150	870	700	575

FOR 2200 VOLTS.

15	1755	1160	870		
20	1760	1165	870		
25, 35, 50,	1760	1170	875	700	
75, 100, 150, 200	1765	1175	875	700	585

Ask any user and let him tell you.

THE JEFFREY MANUFACTURING COMPANY

SALES OFFICES:
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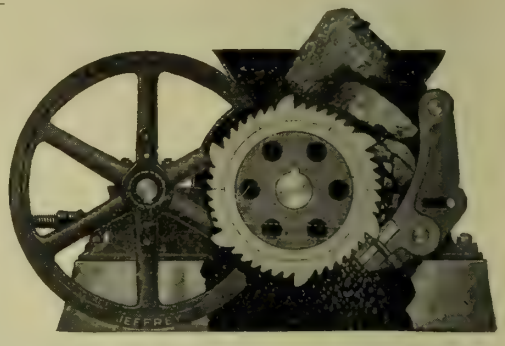
Single Roll Coal Crusher For Sizing Coal For Stoker Use

One operation reduces large lumps and run-of mine coal to 1" and under, the proved size for stoker use.

Receives coal in any volume direct from a track hopper, grab bucket or mine car without the use of a Feeder.

Easily Adjusted. In five minutes, without shutting off the power, the sizes of product can be changed from 7 inches to ¾ of an inch.

Can be started up under full load—cannot be flooded or choked down. Equipped with an efficient Safety Device which protects against shocks and accidents.



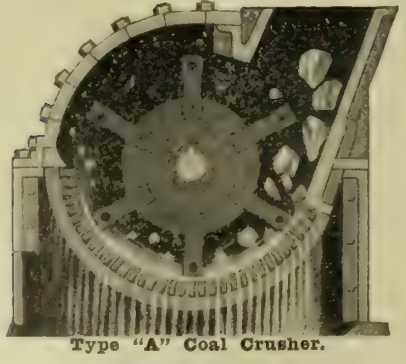
Consumes but little power—costs little to install.

Table of Capacities			Using Hard Bituminous Coal Such as Indiana Block							Using Medium Bituminous Coal Such as Ohio or Illinois Run-of-Mine							Using Soft Bituminous Coal Such as Pocahontas						
Size Crusher Inches	Drum R. P. M.	Appr'x H. P. †	*Size of Product—Tons per Hr.							*Size of Product—Tons per Hr.							*Size of Product—Tons per Hr.						
			1"	1¼"	1½"	2"	2½"	3"	4"	1"	1¼"	1½"	2"	2½"	3"	4"	1"	1¼"	1½"	2"	2½"	3"	4"
18 x 18	75	15	20	25	30	40	.....	.....	.....	30	35	40	45	.....	.....	.....	50	50	50	50	.....	.....	.....
24 x 24	60	30	30	35	45	60	75	90	.....	50	60	70	80	90	100	.....	100	110	115	120	120	120	.....
30 x 30	50	40	50	50	60	80	100	120	160	75	85	100	125	150	170	180	160	170	180	190	200	200	200
36 x 36	40	60	75	80	100	110	130	150	175	100	115	125	150	175	200	200	175	200	225	250	250	250	250

*By "Size of Product" is meants average results, 80 to 90 per cent. pass screen indicated.
†Horse power will vary according to exact nature of coal as to hardness, toughness, friability and moisture.

Size Inches	Shipping Weight, Pounds	Largest Lump for Feed, inches	Max. Speed (R. P. M.)		Size Pulley Inches	
			Roll	Pulley	Dia.	Face
18x18	3200	8	125	500	34	6½
24x24	6500	14	100	400	42	8½
30x30	10500	20	75	300	48	10½
36x36	20000	20	60	240	60	12½

200 Jeffrey Single Roll Crushers are now in use and doing everything we claim for them. **Write for Bulletin No. 141-62,** containing Illustrations, Detail Drawings, Descriptions and Testimonials.



Type "A" Coal Crusher.

Swing Hammer Crushers for Reducing Coal for Coking Purposes

Combine distinctive features in design and construction that insure uniform fineness, the most essential requirement in making good coke.

Type A Crusher

is also particularly adapted for the reduction of refuse or Culm, for flushing back into the mines by water.

Wide openings between the screen bars of Type B Crushers prevent clogging the machine when pulverizing wet coal, cause minimum wear on hammers and allow small pieces of iron to pass through without dropping bottom or stopping the machine. **Write for Bulletin No. 147-62.**



Type "B" Coal Crusher.

Type "A" Coal Crusher

B 2	30"	24"	35	4300	1100 to 1200	20 to 25 tons Run Mine Coal ¼" to Dust
B 3	36"	30"	70	7300	1000 to 1100	50 to 60 tons " " " " "
B 6	42"	24"	70	8000	900 to 1000	50 to 60 tons " " " " "
B 4	42"	36"	80	9000	900 to 1000	70 to 75 tons " " " " "
B 5	42"	48"	110	16000	800 to 900	90 to 100 tons " " " " "

Type "B" Coal Crusher

Code	No.	Dia.	Wid.	Pulley	Approx. H. P.	Aprx Wt. Lbs.	Speed	Floor Space	Feed Opening	Approx. Cap'y Run Mine Coal ¼" to Dust pr hr
Cruknife....	H 2	24"	20"	12"x10"	15 to 18	4000	1200 to 1400	5' 9 "x3' 4½"	15"x20"	8 to 10 tons
Crudish....	H 3	36"	24"	22"x15"	50 to 60	9600	900 to 1100	7' 9½"x4' 8½"	22"x24"	50 to 60 tons
Cruspoon....	H 6	36"	42"	24"x24"	90 to 100	11000	800 to 1000	10' x4' 8½"	22"x42"	90 to 100 tons
Cruladle....	H 7	36"	48"	24"x24"	140 to 150	15000	800 to 1000	10' 7 "x4' 8½"	22"x48"	150 tons
Crublade....	H 8	42"	60"	26"x28"	225 to 250	30000	700 to 900	15' 4 "x5' 8 "	20"x60"	250 tons

PENNSYLVANIA CRUSHER CO.

Stephen Girard Building, PHILADELPHIA, PA.

NEW YORK PITTSBURGH, Benedum-Trees Bldg.

Products.

Coal crushing and cleaning machinery for By-Product and Bee-Hive coke plants, Swing Hammer Crushers, Bradford Coal Cleaners, Rotary and Jaw crushers, Single Roll crushers, Grinding Pans, Delamater "sink and float" Testers.

"Pennsylvania" Swing-Hammer Crushers

Extensively used for pulverizing bituminous coals in By-Product and Bee-Hive coking plants, for crushing Cement Rocks and Limestones in Cement Mills, for Lime, Shales, Bone and a multitude of other materials.

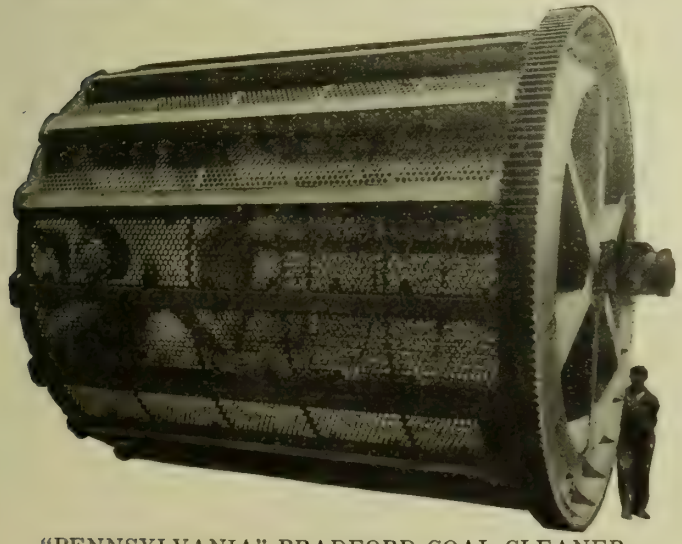
Main frame of fabricated Steel practically immune from breakage. Removable Steel Wear-Liners, Ball & Socket Bearings, 6, 8 and 10 rows of hammers, large diameter Steel discs, quick adjustable Grinding Cage. Built in capacities 3 tons to 500 tons hourly. By weight the "Pennsylvania" is more than 90% Steel. Also builders of the only **One-piece** Cast Iron Frame on the market.

"Pennsylvania" Bradford Coal Cleaners. (For Coke Ovens, Coal Washeries and Power Plants.)

In addition to its distinct advantage as a Crusher, this machine has the **remarkable ability to automatically remove impurities** such as slate, bone, sulphur balls or binder from bituminous steam and coking coals, thereby reducing the objectionable ash and sulphur.

It is used extensively in preparing R. O. M. coals in By-Product and Bee-Hive Ovens, Coal Washeries, etc.

In addition to its crushing and cleaning functions for R. O. M. coal for **large Power Houses,** the "Pennsylvania" Bradford is most efficient in removing stray iron, coupling pins, mine props and all sorts of impedimenta that damage conveyors, stokers and other power house machinery.

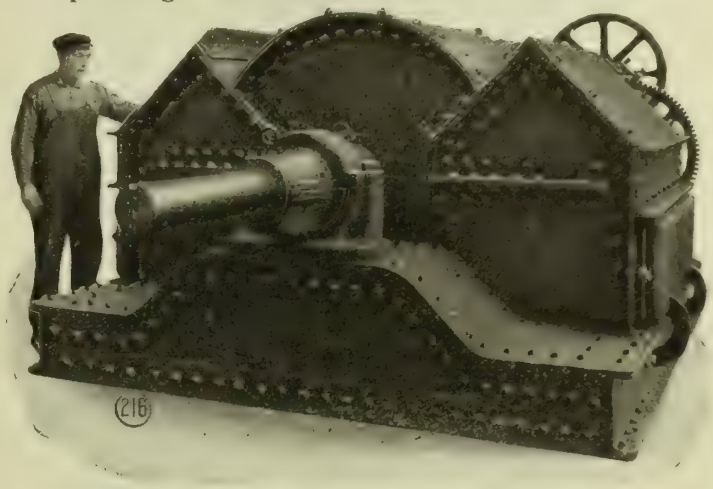


"PENNSYLVANIA" BRADFORD COAL CLEANER.
(Patented.)

For Coal Washeries and Stoker-feed it crushes R. O. M. with less fines than rolls or any other type.

Absolutely automatic in operation, low horse-power, runs 12 to 15 r. p. m., requires no labor to operate, other than occasional oiling. Is practically "fool-proof." Built in capacities 10 to 300 tons hourly.

These "Pennsylvania" Bradfords are successfully operating in connection with Coal Washers.



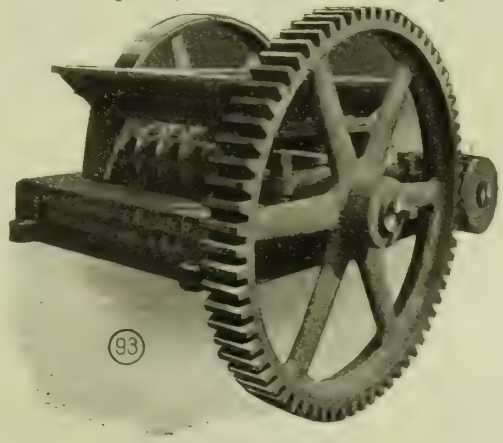
"PENNSYLVANIA" HAMMER CRUSHER.
(Patented.)

"Pennsylvania" Single Roll Crushers

For coarse and moderately fine crushing of coal, coke, lime, limestone, fireclays, shales, phosphate rock, chemicals, etc. Excellent for stoker-feed crushing.

Features:

1—Big reduction of large lumps in ONE operation.
2—Fed from bin, car, grab-bucket or steam shovel—no mechanical feeder.
3—Not choked by overfeed—different from 2-roll crusher.
4—Roll won't spread, no matter how heavily fed.



ROLL CRUSHER.

5—Can be started with hopper full.
6—Automatic safety device.
7—Readily adjustable for varying sizes of crushing.
8—Wear parts quickly accessible.
9—Slow speed—35 to 40 R. P. M.
10—Easy on horse power.
11—Several sizes, ruggedly built, simple design.
12—Very economical of headroom.
13—Low upkeep and installation.
14—No changing pitch diameters.

THE WILLIAMS PATENT CRUSHER AND PULVERIZER CO.

OLD COLONY BUILDING, CHICAGO

WORKS: ST. LOUIS

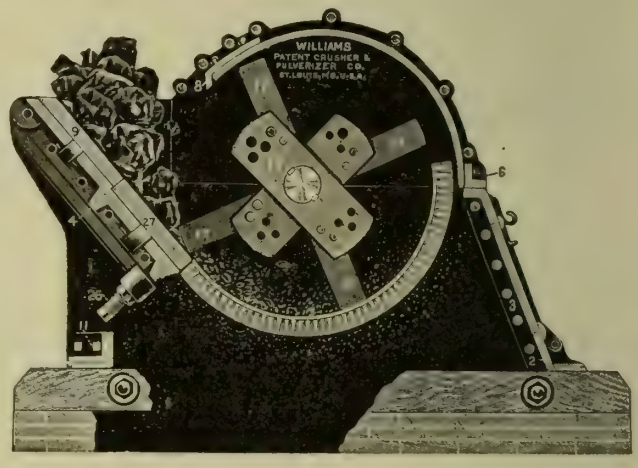
OFFICES: NEW YORK, SAN FRANCISCO, PHILADELPHIA, PITTSBURGH

COAL CRUSHERS FOR COKE OVEN WORK

Results—By the use of the Williams Patent Hammer Crushers with the various adjustable features, the following results are obtained from the ovens: The oven pulls easier, as the structure of the coke is more uniform—more coke is made from each oven, there being no waste, no black hearts and uncoked ends—the ash is reduced and added to the amount of coke produced—the coke comes out firm, regular in size, does not crumble, as it contains no cross fractures, and the structure is much improved. In a great many plants where these crushers have been used, the grade of coke has been raised from second and third to first quality. There is no question but that the application of a machine of this type to your plant will greatly improve the quality of your coke.

Bee Hive Oven—Where crushing coal for the ordinary bee hive oven, these regular machines should be used up to capacities of 200 tons per hour when crushing to ½″ or ⅜″, or up to 150 tons per hour when crushing to ¼″ and finer, and up to 120 tons per hour when crushing to ⅛″ and finer.

By-Product Oven—When working in connection with the improved By-Product ovens, this Regular type of Crusher should be used where capacities run



from 10 tons per hour upwards to 120 tons as the general specifications on crushed coal for by-product ovens is in some cases 80 to 85% ⅛″ and finer, and in extreme cases 90% ⅛″ and finer.

REGULAR SPECIFICATIONS

Size Mill	Hopper Opening	Size Feed	Capacity Tons Per Hour			Speed	Size Pulley		Extreme Dimensions			Horse Power	Weight
	Inches		½″ & finer	¼″ & finer	⅛″ & finer	R.P.M.	Diam.	Face	Length	Width	Height		Pounds
1	15 x 12	Run of Mine	30- 40	25- 30	20- 25	1000	20″	15″	6′	6′ 6″	3′ 9″	20-25	6500
2	20 x 12		45- 55	40- 50	30- 40	1000	20″	15″	6′	7′ 6″	3′ 9″	30-35	7500
3	30 x 16		65- 80	60- 70	45- 60	1000	20″	15″	6′	8′ 6″	3′ 9″	50-60	9500
4	40 x 18		100-115	80- 90	60- 80	1000	24″	18″	6′	9′ 0″	3′ 9″	75-80	10500
5	50 x 20		120-140	100-110	75-100	1000	24″	20″	6′	9′ 6″	3′ 9″	100	12000
6	60 x 20		150-175	115-130	100-120	1000	24″	22″	6′	11′ 0″	3′ 9″	125	13500

We furnish a Williams Flexible Coupling in place of Pulley Without Extra Cost.

JUMBO CRUSHERS

General Construction—To give the reader some idea of the general construction of this type of machine, we would call attention to the fact that all of the Jumbos are 48″ in diameter and of different widths, the No. 5 being 30″ wide, the No. 6, 36″; the No. 7 is 48″ wide, and the No. 8 is 60″ wide. The hopper openings are very large and will accommodate the largest run of mine coal. The extreme height of this machine is 62½″, the weights vary from 20,000 to 30,000 lbs., depending on the size.

JUMBO SPECIFICATIONS

Size Mill	Hopper Opening	Size Feed	Capacity Tons Per Hour			Speed	Size Pulley		Horse Power	Extreme Dimensions			Weight
	Inches		½″ & finer	¼″ & finer	⅛″ & finer	R.P.M.	Diam.	Face		Length	Width	Height	Pounds
5	30 x 24	R. O. M.	150-175	120-140	80-100	750	24″	18″	85-100	8′ 10″	9′	5′ 4″	20000
6	36 x 24		180-200	145-165	120-140	750	30″	20″	140-150	8′ 10″	10′	5′ 4″	24000
7	48 x 30		225-250	200-220	150-175	750	30″	24″	165-185	8′ 10″	11′	5′ 4″	28000
8	60 x 30		275-300	250-275	180-200	750	30″	24″	200-250	8′ 10″	13′	5′ 4″	30000

CAMEL BACK CRUSHERS

These Camel Back machines are especially advocated for capacities at ½″ and ⅜″ crushing ranging from 200 to 400 tons per hour, at ¼″ crushing from 150 to 250 tons per hour, and on ⅛″ crushing from 125 to 200 tons per hour. An operator may have four or six rows of hammers, as desired; where run of mine coal is used, four rows are advocated by us and where slack, crushed, sized, or Bradford Breaker coal is used, six rows of hammers are advocated.

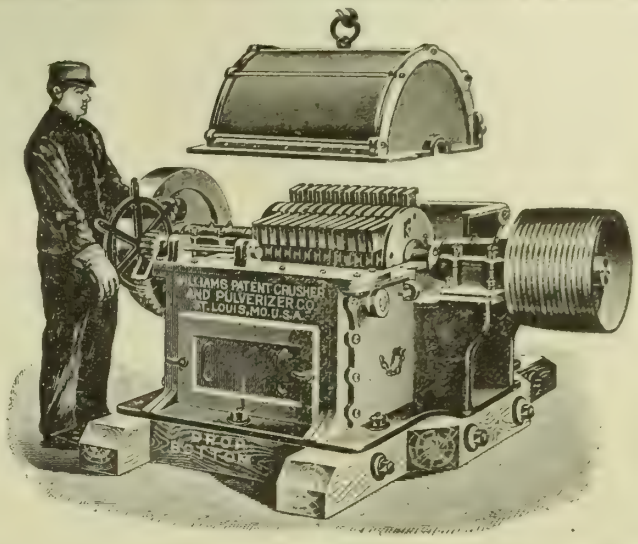
CAMEL BACK SPECIFICATIONS

Size Mill	Hopper Opening	Size Feed	Capacity Tons Per Hour			Speed	Size Pulley		Extreme Dimensions			Horse Power	Weight
	Inches		½" & finer	¼" & finer	⅛" & finer	R.P.M.	Diam.	Face	Length	Width	Height		Pounds
5	24 x 15	R. O. M.	120-140	100-115	75- 85	1000	24"	16"	7' 6"	9' 6"	4' 5"	80- 90	15000
6	36 x 15		175-200	150-165	110-130	1000	24"	18"	7' 6"	10' 6"	4' 5"	100-125	20000
7	48 x 15		225-260	200-225	135-175	1000	24"	20"	7' 6"	11' 6"	4' 5"	140-160	24000
8	60 x 15		300-325	250-280	175-215	1000	24"	22"	7' 6"	12' 8"	4' 5"	175-200	28000

CRUSHERS FOR SIZING COAL FOR STOKERS

The Williams Patent Coal Splitter takes Run of Mine Coal and reduces the same to 1½", 1¼", 1", ¾" and finer with the "minimum amount of fine dust," the only machine made that can be regulated to properly size coal. All parts are adjustable to wear; the crusher is also adjustable to give most any size coal desired.

All large industrial plants are no doubt troubled, from time to time, with a shortage of screenings. This is caused by many mine conditions, chief among which we believe to be the decreasing demand for lump, or the larger sizes of coal. Where a mine has little demand for special size coal, naturally, they can make a very small percentage of screenings or slack. It must also be taken into consideration that a very large percentage of industrial plants are now equipped with chain Grates or Stokers, which demand Slack or Screenings, consequently the demand for lump or run of mine is reduced, and to what many think is a dangerous point, therefore, the only remedy for a scarcity of Slack or Screenings is the adoption



of Crushers, either at the Mine or at the plants where the coal is used.

BRIEF SPECIFICATIONS

No. of Crusher	Hopper Opening Inches	Weight	Horse Power	Capacity—Tons Per Hour R.O.M. to 1½" and Finer
1	15 x 12	6,500	15 to 20	25 to 40
2	20 x 12	7,200	20 to 25	50 to 60
3	30 x 16	9,500	40 to 50	75 to 100
4	40 x 18	10,500	60 to 75	100 to 125
5	50 x 20	12,000	85 to 100	135 to 175
6	60 x 20	13,500	100 to 125	180 to 220
7	48 x 36	22,000	135 to 175	250 to 275
8	60 x 36	30,000	200 to 250	300 to 375
9	60 x 40	40,000	275 to 350	400 to 500

CRUSHERS FOR MINE DEBRIS

In offering to the Anthracite trade our patent Hinged Hammer Debris Crushers for the reduction of Anthracite Debris or Culm, we do so, knowing that every Mine Manager, Superintendent, and Foreman, appreciates the value of crushing their refuse, and flushing it back into the Mines by water.

This is not a new idea; some mines have used this system for years, hence we believe that you are more or less familiar with this proposition, but on the subject of properly crushing and treating this material before flushing it into the mines, we think that we can be of some service to you, and will briefly call your attention to the crushers we have to offer for this work.

SPECIFICATIONS

Size Mill	Hopper Opening	Size Feed	Capacity Tons Per Hour			Speed	Size Pulley		Extreme Dimensions			Horse Power	Weight
	Inches		¾"	½"	¼"	R.P.M.	Diam.	Face	Length	Width	Height		Pounds
1	15 x 12	Run of Mine	30	20	15	1000	20"	15"	6'	6' 6"	3' 9"	20-25	6500
2	20 x 12		40	35	25	1000	20"	15"	6'	7' 6"	3' 9"	25-30	7500
3	30 x 16		65	50	35	1000	20"	15"	6'	8' 6"	3' 9"	40-50	9500
4	40 x 18		80	70	60	1000	24"	18"	6'	9' 0"	3' 9"	75-80	10500
5	50 x 20		115	85-100	75	1000	24"	20"	6'	9' 6"	3' 9"	100	12000
6	60 x 20		130	110-125	90-100	1000	24"	22"	6'	11' 0"	3' 9"	125	13500

Special Note—All Williams Crushers mentioned herewith are equipped with Adjustable hammers, adjustable disc plates, adjustable cages, adjustable Breaker Plates, extra heavy housing construction, lined with liners to protect housing from wear, heavy shafts, substantial dynamo journals, which mean the maximum capacity, minimum horse power, and minimum cost for maintenance or upkeep. No other similar crusher made has these features.

WRITE FOR COMPLETE COAL CATALOG NO. 50

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FEB 5 - 1921



MINE TIMBERING AND BUILDING MATERIALS SECTION

Engineering Data

Tables—Safe Loads Steel Beams.
Mine Timbering and Building Materials Section.
Safe Load for Steel Beams.
Safe Load Beams and Posts of various Woods.
Lumber Table.
Board Measure.
Tables—Safe Loads Steel Beams and Posts of Different Woods.
Specific Gravity and Weights of Woods.
Tensile Strength of all materials.
Brick Work.
Stone Work.
Concrete in Mine Construction.

The following manufacturers and dealers have catalogue descriptions in this section:

American Lumber & Mfg. Co.
Asphalt Ready Roofing Co.
Cabot, Samuel, Inc.
C-A-Wood Preserver Co.
Johns-Manville, H. W., Co.
Keasbey & Mattison Co.
Patent Vulcanite Roofing Co.
Terhune Lumber Co.
Taylor & Dean.
Yellow Pine Co. of Philadelphia.

For additional descriptions of Mine Timbering and Building Materials not appearing in this section, refer to Index of Products in front of book.

STEEL BEAMS AND STRUTS

EXPLANATORY NOTES

Tables of safe loads for H and I sections as beams:—The safe loads given in tables are based upon extreme fiber stresses of 16,000 pounds per square inch. Safe loads include the weight of the beam and are assumed to be uniformly distributed.

For beams without lateral supports, when the span exceeds 20 times the flange width, the tabulated safe loads should be reduced as shown in the following tables:

Length of Beam	Maximum Safe Load	Length of Beam	Maximum Safe Load
20 x flange width	full tabulated load	50 x flange width	$\frac{7}{10}$ of tabulated load
30 x " "	$\frac{9}{10}$ of " "	60 x " "	$\frac{6}{10}$ " "
40 x " "	$\frac{8}{10}$ of " "	70 x " "	$\frac{5}{10}$ " "

The safe loads given above the horizontal lines shown in tables are the extreme safe loads based upon the safe strength of the web and should not be exceeded for shorter spans to avoid crippling of the web due to shearing strains.

The Deflection Coefficients, derived from fiber stress 16,000 pounds and modulus of elasticity of 29,000,000 pounds per square inch, are given for the maximum uniformly distributed loads on various spans. The maximum deflection, in inches, of a beam in the center of its span is obtained by dividing the deflection coefficient by the depth of the beam in inches.

For loads concentrated in the center of a span, use one-half of the safe loads given in table; the deflection is four-fifths of the deflection produced by the maximum safe load uniformly distributed over the span.

Tables of Safe Loads for H-sections as Struts and for Double Channel Struts:—The safe loads given in tables are assumed to be centrally applied and have been determined in accordance with the requirements of the New York Building Law. The allowable compressive stress in pounds per square inch is as follows;—

$P = 15{,}200 - 58\frac{l}{r}$. $\frac{l}{r}$ = unsupported length of strut, in inches / least radius of gyration, in inches

the allowable ratio of $\frac{l}{r}$ ranging between 55 and 120, equivalent to a maximum and minimum stress of 12,000 and 8,240 pounds per square inch, respectively.

Note.—The safe loads of Double Channel Struts are based upon the least radii of gyration equal to radii about axis perpendicular to web and do not apply in cases where the distance between channels would be less than one-half the depth of the channels.

Tables of Pins:—The tables for pins have been calculated for shearing, bending and bearing stresses. The stresses allowed, in pounds per square inch, are as follows:—

Single shearing stress, - - 10,000 lbs. per sq. in.
Bending stress, - - 20,000 lbs. per sq. in.
Bearing stress, - - 20,000 lbs. per sq. in.

H-SECTIONS AS STRUTS

Safe Loads in Pounds, for Direct Loads

Compressive Stresses, 15200-58 $\frac{l}{r}$ pounds per square inch

Length of Struts Feet	8" H 34.0 Lbs. Area 10.00 ins.² min. I 1.87 ins.	6" H 23.8 Lbs. Area 7.00 ins.² min. I 1.45 ins.	5" H 18.7 Lbs. Area 5.50 ins.² min. I 1.20 ins.	4" H 13.6 Lbs. Area 4.00 ins.² min. I 0.95 ins.	Length of Struts Feet
5				48000 / 46150	5
6			66000 / 64460	43220	6
7		84000 / 82880	61270	40290	7
8		79520	58080	37360	8
9	120000 / 118500	76160	54890	34430	9
10	114780	72800	51700	31500	10
11	111060	69440	48510		11
12	107340	66080	45320		12
13	103610	62720			13
14	99890	59360			14
15	96170				15
16	92450				16
17	88730				17
18	85000				18

Safe loads above horizontal lines are based upon 12000 pounds per square inch, equivalent to ratio of $\frac{l}{r} = 55$.

Maximum allowable ratio of $\frac{l}{r} = 120$ is equivalent to a stress of 8240 pounds per square inch.

Courtesy Carnegie Steel Co.

H-SECTIONS AS BEAMS

Safe Loads in Pounds, for Uniformly Distributed Loads

Bending Stresses, 16,000 pounds per square inch

Length of Span, Feet	8" H 34.0 Lbs. I_{1-1} 115.42 ins.⁴ S_{1-1} 28.86 ins.³	6" H 23.8 Lbs. I_{1-1} 45.12 ins.⁴ S_{1-1} 15.04 ins.³	5" H 18.7 Lbs. I_{1-1} 23.77 ins.⁴ S_{1-1} 9.51 ins.³	4" H 13.6 Lbs. I_{1-1} 10.69 ins.⁴ S_{1-1} 5.34 ins.³	Coefficients of Deflection
2				28500	0.066
3				19000	0.149
4			34600 / 25350	14250	0.265
5		39070 / 32080	20280	11400	0.414
6	60640 / 51300	26740	16900	9500	0.596
7	43970	22920	14490	8140	0.811
8	38470	20050	12680	7130	1.059
9	34200	17820	11270	6330	1.341
10	30780	16040	10140	5700	1.655
11	27980	14580	9220	5180	2.003
12	25650	13370	8450	4750	2.383
13	23680	12340	7800	4380	2.797
14	21990	11460	7240	4070	3.244
15	20520	10690	6760	3800	3.724
16	19240	10030	6340	3560	4.237
17	18110	9440	5970		4.783
18	17100	8910	5630		5.363
19	16200	8440			5.975
20	15390	8020			6.621
21	14660				7.299
22	13990				8.011
23	13380				8.756
24	12820				9.534

DEFLECTION IN CENTER OF SPAN, IN INCHES

For loads uniformly distributed over span, $\frac{\text{coefficient}}{\text{depth of beam in inches}}$.

For loads concentrated in center of span, $\frac{4}{5} \times \frac{\text{coefficient}}{\text{depth of beam in inches}}$.

I-SECTIONS AS BEAMS

Safe Loads in Pounds, for Uniformly Distributed Loads

Bending Stresses, 16000 pounds per square inch

Length of Span, Feet	5"x3.00" I 9.75 Lbs.	6"x3.33" I 12.25 Lbs.	7"x3.66" I 15 Lbs.	8"x4.00" I 18 Lbs.	9"x4.33" I 21 Lbs.	10"x4.69" I 25 Lbs.	Coefficients of Deflection
3	21090 / 17200	26470 / 25820	32810	38320			0.149
4	12900	19370	27600	37920	44310		0.265
5	10320	15490	22080	30330	40260		0.414
6	8600	12910	18400	25280	33550	51690 / 43410	0.596
7	7370	11070	15770	21670	28760	37210	0.811
8	6450	9680	13800	18960	25160	32560	1.059
9	5730	8610	12270	16850	22370	28940	1.341
10	5160	7750	11040	15170	20130	26050	1.655
11	4690	7040	10040	13790	18300	23680	2.003
12	4300	6460	9200	12640	16780	21710	2.383
13	3970	5960	8490	11670	15480	20040	2.797
14	3690	5530	7890	10830	14380	18610	3.244
15	3440	5160	7360	10110	13420	17360	3.724
16	3220	4840	6900	9480	12580	16280	4.237
17	3030	4560	6500	8920	11840	15320	4.783
18	2870	4300	6130	8430	11180	14470	5.363
19		4080	5810	7980	10590	13710	5.975
20		3870	5520	7580	10070	13020	6.621
21			5260	7220	9590	12400	7.299
22			5020	6890	9150	11840	8.011
23				6590	8750	11320	8.756
24				6320	8390	10850	9.534
25					8050	10420	10.345
26					7740	10020	11.189
27						9650	12.066
28						9300	12.977
29							13.920
30							14.897
31							15.906
32							16.949
33							18.025

DEFLECTION IN CENTER OF SPAN IN INCHES

For loads uniformly distributed over span, $\frac{\text{coefficient}}{\text{depth of beam in inches}}$.

For loads concentrated in center of span, $\frac{4}{5} \times \frac{\text{coefficient}}{\text{depth of beam in inches}}$

I-SECTIONS AS BEAMS

Safe Loads in Pounds, for Uniformly Distributed Loads

Bending Stresses, 16000 pounds per square inch

Length of Span, Feet.	12"x5.00" I 31.5 Lbs.	15"x5.50" I 42 Lbs.	15"x6.00" I 60 Lbs.	18"x6.00" I 55 Lbs.	20"x6.25" I 65 Lbs.	24"x7.00" I 80 Lbs.	Coefficients of Deflection.
	66360		167310				
6	63950	91310	144360				0.596
7	54810	89750	123730				0.811
8	47960	78530	108270	114870			1.059
9	42630	69810	96240	104700	136060		1.341
10	38370	62830	86610	94290	124750		1.655
11	34880	57120	78740	85720	113400		2.003
12	31970	52360	72180	78570	103950		2.383
13	29510	48330	66630	72530	95960		2.797
14	27410	44880	61870	67350	89100	134430	3.244
15	25580	41880	57740	62860	83160	123690	3.724
16	23980	39270	54130	58930	77970	115960	4.237
17	22570	36960	50950	55460	73380	109140	4.783
18	21320	34900	48120	52380	69300	103070	5.363
19	20190	33070	45590	49630	65660	97650	5.975
20	19180	31410	43310	47140	62370	92770	6.621
21	18270	29920	41240	44900	59400	88350	7.299
22	17440	28560	39370	42860	56700	84330	8.011
23	16680	27320	37660	40990	54240	80670	8.756
24	15990	26180	36090	39290	51980	77300	9.534
25	15350	25130	34650	37720	49900	74210	10.345
26	14760	24160	33310	36270	47980	71360	11.189
27	14210	23270	32080	34920	46200	68720	12.066
28	13700	22440	30930	33670	44550	66260	12.977
29	13230	21660	29870	32510	43020	63980	13.920
30	12790	20940	28870	31430	41580	61840	14.897
31		20270	27940	30420	40240	59850	15.906
32		19630	27070	29470	38980	57980	16.949
33		19040	26250	28570	37800	56220	18.025
34				27730	36690	54570	19.134
35				26940	35640	53010	20.276
36					34650	51540	21.451
37					33720	50140	22.659
38						48830	23.901
39						47570	25.175
40						46380	26.483

TABLES FOR PINS AND WEB BEARING

Two Pins required for each Strut

Load on Post Pounds	Distance Between Channels=Flange Width of Beam in Inches: 4		4½		5		5½		6		6½		7		7½		8	
	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd	Dia. of Pin	Double Web Thickness Req'd
10000	1"	.222	1"	.222	1"	.222	1"	.200	1"	.200	1"	.200	1"	.200	1"	.182	1"	.182
20000	1"	.364	1"	.364	1"	.333	1"	.333	1"	.308	1"	.308	1"	.308	1"	.308	1"	.286
30000	1"	.462	1"	.462	1"	.429	1"	.429	1"	.400	1"	.400	1"	.400	1"	.400	2"	.375
40000	1"	.571	1"	.571	1"	.533	1"	.533	2"	.500	2"	.500	2"	.471	2"	.471	2"	.471
50000	1"	.667	1"	.667	2"	.625	2"	.625	2"	.588	2"	.588	2"	.556	2"	.556	2"	.526
60000	2"	.750	2"	.750	2"	.700	2"	.667	2"	.667	2"	.632	2"	.632	2"	.632	2"	.600
70000	2"	.824	2"	.824	2"	.778	2"	.778	2"	.737	2"	.737	2"	.700	2"	.700	2"	.667
80000	2"	.941	2"	.888	2"	.842	2"	.842	2"	.800	2"	.800	2"	.762	2"	.762	2"	.727
90000	2"	1.000	2"	.947	2"	.900	2"	.900	2"	.857	2"	.857	2"	.818	2"	.818	2"	.783
100000	2"	1.053	2"	1.053	2"	1.000	2"	.953	2"	.953	2"	.909	2"	.870	2"	.870	3"	.833
110000	2"	1.158	2"	1.100	2"	1.048	2"	1.048	2"	1.000	2"	.957	2"	.957	3"	.917	3"	.917
120000	2"	1.263	2"	1.143	2"	1.148	2"	1.091	2"	1.044	2"	1.044	3"	1.000	3"	1.000	3"	.960
130000	2"	1.300	2"	1.238	2"	1.182	2"	1.131	2"	1.131	3"	1.083	3"	1.040	3"	1.040	3"	1.000
140000	2"	1.333	2"	1.273	2"	1.218	2"	1.218	3"	1.167	3"	1.120	3"	1.120	3"	1.077	3"	1.077
150000	2"	1.429	2"	1.364	2"	1.305	3"	1.250	3"	1.250	3"	1.200	3"	1.154	3"	1.154	3"	1.111
160000	2"	1.455	2"	1.392	3"	1.333	3"	1.333	3"	1.281	3"	1.231	3"	1.231	3"	1.185	3"	1.143
170000	2"	1.540	2"	1.478	3"	1.418	3"	1.362	3"	1.308	3"	1.308	3"	1.259	3"	1.259	3"	1.215
180000	2"	1.579	2"	1.500	3"	1.500	3"	1.440	3"	1.385	3"	1.333	3"	1.333	3"	1.280	3"	1.242
190000	2"	1.623	3"	1.585	3"	1.520	3"	1.462	3"	1.408	3"	1.357	3"	1.310	3"	1.310	3"	1.310
200000	3"	1.667	3"	1.667	3"	1.600	3"	1.539	3"	1.482	3"	1.429	3"	1.429	3"	1.380	3"	1.333

EXAMPLE OF A PIN BEARING GANGWAY SUPPORT.

What will be the size required for a pin bearing gangway support, shown on page 20, for a load of 160,000 pounds uniformly distributed over a span of 9 feet between supporting struts, 16 feet in height, and what will be the deflection of beam?

Answer—Table of safe loads of I sections, page 33; nearest section for given load and span is a 20" I 80 pounds, the deflection-coefficient of deflection 1.341

depth of beam 20 = 0.67".

Table of pins shown above; the load on post is $\frac{160000}{2}$ = 80000 pounds and the distance between channels—flange width of 20" I 80 pounds=7". Each of the two pins required for the given load and distance is 2½" diameter, bearing 0.762" on web of channels. Table of Channel Struts, page 34; the nearest channel strut for the given load, web thickness, and height, is one composed of 2-7"[s 14¼ pounds, with a capacity of 93,270 pounds and a double web thickness of 0.846".

By the use of a larger pin the required web thickness can be correspondingly reduced.

 Courtesy Carnegie Steel Co.

DOUBLE CHANNEL STRUTS

Safe Loads in Pounds, for Direct Loads

Compressive Stresses, 15200-58 $\frac{l}{r}$ pounds per square inch for lengths greater than $\frac{l}{r}$ =55.

Compressive Stresses, 12000 pounds per square inch for lengths less than $\frac{l}{r}$ =55.

Description of Channels: Depth	Weight per Ft.	Double Web Thickness	Unsupported Length in Feet: 10 and under	12	14	16	18	20
	8.00	0.400	57120	55290	52450	49600	46760	43920
	10.50	0.636	74160	70480	66570	62650	58740	54830
6	13.00	0.880	90810	85740	80680	75610	70550	65490
	15.50	1.126	106890	100540	94190	87840	81500	75150
	9.75	0.420	68400	68400	66220	63300	60390	57470
	12.25	0.636	86400	86220	82350	78480	74610	70740
7	14.75	0.846	104160	102940	98110	93270	88440	83610
	17.25	1.056	121680	119280	113470	107680	101850	96040
	19.75	1.266	139440	135330	128440	121560	114680	107790
	11.25	0.440	80400	80400	80400	77850	74850	71850
	13.75	0.614	96960	96960	96480	92720	88960	85200
8	16.25	0.798	114720	114720	113080	108480	103870	99270
	18.75	0.980	132240	132240	129430	123990	118550	113110
	21.25	1.164	150000	150000	146030	139750	133470	123190
	13.25	0.460	93360	93360	93360	93430	90330	87230
9	15.00	0.576	105840	105840	105840	105180	101570	97960
	20.00	0.904	141120	141120	141120	138080	133000	127910
	25.00	1.230	176400	176400	176400	170630	164030	157430
	15.00	0.480	107040	107040	107040	107040	106710	103500
	20.00	0.764	141120	141120	141120	141120	138500	134030
10	25.00	1.058	176400	176400	176400	176400	171120	165310
	30.00	1.352	211680	211680	211680	210690	203510	196330
	35.00	1.646	246960	246960	246960	244410	235850	227300
	20.50	0.560	144720	144720	144720	144720	144720	144720
	25.00	0.780	176400	176400	176400	176400	176400	176400
12	30.00	1.026	211680	211680	211680	211680	211680	210760
	35.00	1.272	246960	246960	246960	246960	246960	244120
	40.00	1.516	282240	282240	282240	282240	282240	277460
	33.00	0.800	237600	237600	237600	237600	237600	237600
	35.00	0.852	246960	246960	246960	246960	246960	246960
15	40.00	1.048	282240	282240	282240	282240	282240	282240
	45.00	1.244	317760	317760	317760	317760	317760	317760
	50.00	1.440	353040	353040	353040	353040	353040	353040
	55.00	1.636	388320	388320	388320	388320	388320	388320

WOODEN BEAMS AND POSTS

EXPLANATORY NOTES

Tables of Timber Beams:—The tables give the uniformly distributed safe loads of timber beams for various species of timber and are based upon the following values of maximum unit stresses.

Species of Timber	Allowable Unit Stresses, in Lbs. per Sq. In.	
	Bending Stresses	Shearing Stresses
Oak	1200 lbs. per square inch	100 lbs. per square inch
Yellow Pine, Long Leaf	1200 " " "	70 " " "
Yellow Pine, Short Leaf	900 " " "	50 " " "
White Pine	700 " " "	40 " " "
Spruce	800 " " "	50 " " "

The loads given above horizontal lines in tables are the safe loads based upon the extreme shearing stresses given above and should not be exceeded for shorter spans, to avoid failure of beam by shearing.

For loads concentrated in the center of span, use one-half of the uniformly distributed safe load.

Coefficients of Deflection for Timber Beams:—Coefficients are given for maximum uniformly distributed loads based upon the extreme bending stresses given above and upon the following modull of elasticity, in pounds per square inch:

Oak,	1,500,000	White Pine	1,000,000
Yellow Pine,	1,600,000	Spruce,	1,200,000

The deflection in the center of the span, in inches, is obtained by dividing the coefficient corresponding to the maximum safe load by the depth of the beam in inches.

Safe loads for rectangular timber beams may be obtained from the tables for square timber beams by direct proportion of width to width. The load for a 10"x12" rectangular beam is 5-6 that of a 12"x 12", etc.

Tables of Timber Posts:—The safe loads given in tables are assumed to be centrally applied and are based upon the following compressive unit stresses.

Species of Timber	Compressive Unit Stress, in Lbs. per Sq. in.		
	General Formula	Maximum l/d=10	Minimum l/d=30
Oak	900—17 l/d	730	390
Yellow Pine, Long Leaf	1000—18 l/d	820	460
Yellow Pine, Short Leaf	¾(1000—18 l/d)	615	345
White Pine	800—15 l/d	650	350
Spruce	800—15 l/d	650	350

$\frac{l}{d}$ = $\frac{\text{unsupported length of strut, in inches,}}{\text{least diameter or side, in inches}}$ the allowable ratio of l/d ranging between 10 and 30 equivalent to the maximum and minimum unit stresses given above.

Values given above horizontal lines are the maximum safe loads.

NOTE:—The safe loads given in the tables of timber beams and posts are for seasoned timber only; for green timber use two-thirds of the value shown.

COEFFICIENTS OF DEFLECTION FOR TIMBER BEAMS

Span Feet	Coefficients: Oak, Yellow Pine, L. L.	Yellow Pine, S. L.	White Pine	Spruce	Span Feet	Coefficients: Oak, Yellow Pine, L. L.	Yellow Pine, S. L.	White Pine	Spruce
1	0.024	0.018	0.021	0.020	21	10.584	7.938	9.261	8.820
2	0.096	0.072	0.084	0.080	22	11.616	8.712	10.164	9.680
3	0.216	0.162	0.189	0.180	23	12.696	9.522	11.109	10.580
4	0.384	0.288	0.336	0.320	24	13.824	10.368	12.096	11.520
5	0.600	0.450	0.525	0.500	25	15.000	11.250	13.125	12.500
6	0.864	0.648	0.756	0.720	26	16.224	12.168	14.196	13.520
7	1.176	0.882	1.029	0.980	27	17.496	13.122	15.309	14.580
8	1.536	1.152	1.344	1.280	28	18.816	14.112	16.464	15.680
9	1.944	1.458	1.701	1.620	29	20.184	15.138	17.661	16.820
10	2.400	1.800	2.100	2.000	30	21.600	16.200	18.900	18.000
11	2.904	2.178	2.541	2.420	31	23.064	17.298	20.181	19.220
12	3.456	2.592	3.024	2.880	32	24.576	18.432	21.504	20.480
13	4.056	3.042	3.549	3.380	33	26.136	19.602	22.869	21.780
14	4.704	3.528	4.116	3.920	34	27.744	20.808	24.276	23.120
15	5.400	4.050	4.725	4.500	35	29.400	22.050	25.725	24.500
16	6.144	4.608	5.376	5.120	36	31.104	23.328	27.216	25.920
17	6.936	5.202	6.069	5.780	37	32.856	24.642	28.749	27.380
18	7.776	5.832	6.804	6.480	38	34.656	25.992	30.324	28.880
19	8.664	6.498	7.581	7.220	39	36.504	27.378	31.941	30.420
20	9.600	7.200	8.400	8.000	40	38.400	28.800	33.600	32.000

DEFLECTION IN CENTER OF SPAN, IN INCHES

For loads uniformly distributed over span, $\frac{\text{coefficient}}{\text{depth of beam in inches}}$

For loads concentrated in center of span, $\frac{4}{5} \times \frac{\text{coefficient}}{\text{depth of beam in inches}}$

EXAMPLES FOR TIMBER TABLES

I. Required the maximum uniformly distributed safe load of an oak beam, 12″ x 12″, for a span of 18 feet, and the deflection.

Answer—Table for oak beams, page 38, shows for the given size and span a safe load of 12,800 pounds. The above table shows for this species and span a coefficient of 7.776, which, divided by the depth, 12″, gives the deflection of 0.648 inch.

II. Find the size of a round collar, green spruce, to support 5,000 pounds in the center of a span of 14 feet.

Answer—5,000 pounds concentrated in center = 2x5,000 = 10,000 pounds uniformly distributed. 10,000 pounds safe load for green timber = $\frac{3}{2}$x10,000 = 15,000 pounds safe load for seasoned timber. Referring to table for spruce beams, page 47, the nearest size for this load is a 16 inch round.

III. What size square post of long leaf yellow pine, 12 feet long, is required to support a load of 100,000 pounds?

Answer—The table on page 50 shows for the given length and nearest load to 100,000 pounds a size of 12″x12″

SQUARE TIMBER BEAMS

OAK

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8″x8″	10″x10″	12″x12″	14″x14″	16″x16″	18″x18″	20″x20″	22″x22″	24″x24″
8	8530								
9	7590	13330							
10	6830	13330							
11	6210	12120	18200						
12	5690	11110	18200						
13	5250	10260	17720	26130					
14	4880	9520	16460	26130					
15	4550	8890	15360	24390					
16	4270	8330	14400	22870	34130				
17	4020	7840	13550	21520	32130	43200			
18	3790	7410	12800	20330	30340	43200			
19		7020	12130	19260	28740	40930	53330		
20		6670	11520	18290	27310	38880	53330		
21		6350	10970	17420	26010	37030	50790	64530	
22			10470	16630	24820	35350	48480	64530	
23			10020	15910	23750	33810	46380	61730	76800
24			9600	15240	22760	32400	44440	59160	76800
25				14640	21850	31100	42670	56790	73730
26				14070	21010	29910	41030	54610	70890
27				13550	20230	28800	39510	52580	68270
28					19510	27770	38100	50700	65830
29					18830	26810	36780	48960	63560
30					18200	25920	35560	47320	61440
31						25080	34410	45800	59460
32						24300	33330	44370	57600
33						23560	32320	43020	55850
34							31370	41760	54210
35							30480	40560	52660
36							29630	39440	51200
37								38370	49820
38								37360	48510
39								36400	47260
40								35490	46080

Courtesy Carnegie Steel Co.

ROUND TIMBER BEAMS

OAK

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8″ Dia.	10″ Dia.	12″ Dia.	14″ Dia.	16″ Dia.	18″ Dia.	20″ Dia.	22″ Dia	24″ Dia.
6	6700	11780							
7	5750	11220	16960						
8	5030	9820	16960						
9	4470	8730	15080	23090					
10	4020	7850	13570	21550					
11	3660	7140	12340	19590	29250				
12	3350	6550	11310	17960	26810	38170			
13	3090	6040	10440	16580	24750	38170	47120		
14	2870	5610	9690	15390	22980	32720	44880	57020	
15	2680	5240	9050	14370	21450	30540	41890	55750	
16	2510	4910	8480	13470	20110	28630	39270	52270	67460
17	2370	4620	7980	12680	18920	26940	36960	49190	63870
18	2230	4360	7540	11970	17870	25450	34910	46460	60320
19		4130	7140	11340	16930	24110	33070	44020	57140
20		3930	6790	10780	16090	22900	31420	41820	54140
21		3740	6460	10260	15320	21810	29920	39820	51700
22			6170	9800	14620	20820	28560	38010	49350
23			5900	9370	13990	19920	27320	36360	47210
24			5660	8980	13400	19090	26180	34850	45240
25				8610	12870	18320	25130	33450	43430
26				8290	12370	17620	24170	32170	41760
27				7980	11920	16970	23270	30970	40210
28					11490	16360	22440	29870	38780
29					11090	15800	21670	28840	37440
30					10720	15270	20940	27880	36190
31						14780	20270	26980	35020
32						14310	19640	26130	33930
33						13880	19040	25340	32900
34							18480	24600	31930
35							17950	23890	31020
36							17450	23230	30160
37								22600	29340
38								22010	28570
39								21440	27840
40								20910	27140

SQUARE TIMBER BEAMS

YELLOW PINE, LONG LEAF

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8″x8″	10″x10″	12″x12″	14″x14″	16″x16″	18″x18″	20″x20″	22″x22″	24″x24″
12	5690								
13	5250								
14	4880	9280							
15	4550	8890							
16	4270	8330							
17	4020	7840	18400						
18	3790	7410	12800						
19		7020	12130	18890					
20		6670	11520	18290					
21		6350	10970	17420					
22			10470	16630	23890				
23			10020	15910	23750				
24			9600	15240	22760				
25				14640	21850				
26				14070	21010	30240			
27				13550	20230	28800			
28					19510	27770	37330		
29					18830	26810	36780		
30					18200	25920	35560		
31						25080	34410	45370	
32						24300	33330	44370	
33						23560	32320	43020	
34							31370	41760	53760
35							30480	40560	52660
36							29630	39440	51200
37								38370	49820
38								37360	48510
39								36400	47260
40								35490	46080

ROUND TIMBER BEAMS

YELLOW PINE, LONG LEAF

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.	22" Dia.	24" Dia.
	5280								
8	5030								
9	4470	8280							
10	4020	7850							
			11880						
11	3660	7140	11310						
12	3350	6550	10440	16160					
13	3090	6040	9690	15390					
14	2870	5610	9050	14370					
15	2680	5240			21110				
16	2510	4910	8480	13470	20110				
17	2370	4620	7980	12680	18920	26720			
18	2230	4360	7540	11970	17870	25450			
19		4130	7140	11340	16930	24110	32990		
20		3930	6790	10780	16090	22900	31420		
								39910	
21		3740	6460	10260	15320	21810	29920	39820	
22			6170	9800	14620	20820	28560	38010	47500
23			5900	9370	13990	19920	27320	36360	47210
24			5660	8980	13400	19090	26180	34850	45240
25				8620	12870	18320	25130	33450	43430
26				8290	12370	17620	24170	32170	41760
27				7980	11920	16970	23270	30970	40210
28					11490	16360	22440	29870	38780
29					11090	15800	21670	28840	37440
30					10720	15270	20940	27880	36190
31						14780	20270	26980	35020
32						14310	19640	26130	33930
33						13880	19040	25340	32900
34							18480	24600	31930
35							17950	23890	31020
36							17450	23230	30160
37								22600	29340
38								22010	28570
39								21440	27840
40								20910	27140

SQUARE TIMBER BEAMS

YELLOW PINE, SHORT LEAF

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8"x8"	10"x10"	12"x12"	14' x14"	16"x16"	18"x18"	20"x20"	22"x22"	24"x24"
	4270								
12	4270								
13	3940								
14	3660	6670							
15	3410	6670							
16	3200	6250							
17	3010	5880	9600						
18	2840	5560	9600						
19		5260	9100						
20		5000	8640						
				13070					
21		4760	8230	13070					
22			7860	12470					
23			7510	11930	17070				
24			7200	11430	17070				
25				10980	16380				
26				10550	15750	21600			
27				10170	15170	21600			
28					14630	20830			
29					14120	20110	26670		
30					13650	19440	26670		
31						18810	25810		
32						18230	25000	32270	
33						17670	24240	32270	
34							23530	31320	
35							22860	30420	
									38400
36							22220	29580	38400
37								28780	37360
38								28020	36380
39								27300	35450
40								26620	34560

ROUND TIMBER BEAMS

YELLOW PINE, SHORT LEAF

Safe Loads in Pounds, for Uniformly Distributed Loads,

Length of Span, Feet	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.	22" Dia.	24" Dia.
	3770								
8	3770								
9	3350	5890							
10	3020	5890							
11	2740	5360	8480						
12	2510	4910	8480						
13	2320	4530	7830	11550					
14	2150	4210	7270	11550					
15	2010	3930	6790	10780					
16	1890	3680	6360	10100	15080				
17	1770	3470	5990	9510	14190	19090			
18	1680	3270	5660	8980	13400	19090			
19		3100	5360	8510	12700	18080	23560		
20		2950	5090	8080	12060	17180	23560		
21		2810	4850	7700	11490	16360	22400	28510	
22			4630	7350	10970	15620	21420	28510	
23			4430	7030	10490	14940	20490	27270	33980
24			4240	6740	10050	14310	19640	26130	33930
25				6470	9650	13740	18850	25090	32570
26				6220	9280	13210	18130	24120	31320
27				5990	8940	12720	17450	23230	30160
28					8620	12270	16820	22400	29080
29					8320	11850	16250	21630	28080
30					8040	11450	15710	20910	27140
31						11080	15200	20230	26270
32						10740	14730	19600	25450
33						10410	14280	19000	24680
34							13860	18450	23940
35							13460	17920	23270
36							13000	17420	22620
37								16950	22010
38								16510	21430
39								16080	20880
40								15680	20360

SQUARE TIMBER BEAMS

WHITE PINE

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8"x8"	10"x10"	12"x12"	14"x14"	16"x16"	18"x18"	20"x20"	22"x22"	24"x24"
	3410								
12	3320								
13	3060								
14	2840	5380							
15	2650	5190							
16	2490	4860							
17	2340	4580	7680						
18	2210	4320	7470						
19		4090	7070						
20		3890	6720						
				10450					
21		3700	6400	10160					
22			6110	9700					
23			5840	9280	13680				
24			5600	8890	13270				
25				8540	12740				
26				8210	12250	17880			
27				7900	11800	16800			
28					11380	16200			
29					10990	15640	21880		
30					10620	15120	20740		
31						14630	20070		
32						14180	19440	25810	
33						13750	18860	25100	
34							18300	24360	30780
35							17780	23660	30720
36							17280	23000	29870
37								22380	29060
38								21790	28290
39								21240	27570
40								20700	26880

Courtesy Carnegie Steel Co.

ROUND TIMBER BEAMS

WHITE PINE

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.	22" Dia.	24" Dia.
	3020								
8	2930								
9	2610	4710							
10	2350	4580							
11	2130	4170	6790						
12	1950	3820	6600						
13	1800	3520	6090	9240					
14	1680	3270	5650	8980					
15	1560	3050	5280	8380					
16	1470	2860	4950	7860	12060 11730				
17	1380	2700	4660	7400	11040	15270			
18	1300	2550	4400	6980	10430	14840			
19		2410	4170	6620	9880	14060	18860		
20		2290	3960	6290	9380	13360	18330		
21		2180	3770	5990	8940	12720	17450	22810	
22			3600	5710	8530	12150	16660	22170	
23			3440	5470	8160	11620	15940	21210	27140
24			3300	5240	7820	11130	15270	20330	26390
25				5030	7510	10690	14660	19510	25330
26				4840	7220	10280	14100	18760	24360
27				4660	69 0	9900	13570	18070	23460
28					6700	9540	13090	17420	22620
29					6470	9210	12640	16820	21840
30					6260	8910	12220	16260	21110
31						8620	11820	15740	20430
32						8350	11450	15240	19790
33						8100	11110	14780	19190
34							10780	14350	18630
35							10470	13940	18100
36							0180	13550	17590
37								13180	17120
38								12840	16670
39								12510	16240
40								12200	15830

SQUARE TIMBER BEAMS

SPRUCE

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8"x8"	10"x10"	12"x12"	14"x14"	16"x16"	18"x18"	20"x20"	22"x22"	24"x24"
	4270								
11	4140								
12	3790								
13	3500	6670							
14	3250	6350							
15	3030	5930							
			9600						
16	2840	5560	9600						
17	2680	5230	9040						
18	2530	4940	8530	13070					
19		4680	8080	12840					
20		4440	7680	12200					
21		4230	7310	11610	17070				
22			6980	11090	16550				
23			6680	10600	15840	21600			
24			6400	10170	15170	21600			
25				9760	14560	20740			
26				9380	14000	19940	26670		
27				9030	13480	19200	26340		
28					13000	18510	25390		
29					12550	17880	24520	33370	
30					12130	17280	23700	31550	
31						16720	22940	30530	38400
32						16200	22220	29580	38400
33						15710	21550	28680	37240
34							20910	27840	36140
35							20320	27040	35110
36							19750	26290	34130
37								25580	33210
38								24910	32340
39								24270	31510
40								23660	30720

ROUND TIMBER BEAMS

SPRUCE

Safe Loads in Pounds, for Uniformly Distributed Loads

Length of Span, Feet	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.	22" Dia.	24" Dia.
	4770								
8	3350	5890							
9	2980	5820							
10	2680	5240							
11	2440	4760	8480 8230						
12	2230	4360	7540	11550					
13	2060	4030	6960	11050					
14	1920	3740	6460	10260	15080				
15	1790	3490	6030	9580	14300				
16	1680	3270	5650	8980	13400	19090 19090			
17	1580	3080	5320	8450	12620	17960	23560		
18	1490	2910	5000	7980	11920	16960	23270		
19		2760	4760	7560	11290	16070	22050	28810	
20		2620	4520	7180	10720	15270	20940	27880	
21		2490	4310	6840	10210	14540	19950	26550	
22			4110	6530	9750	13880	19040	25340	32930
23			3930	6250	9330	13280	18210	24240	31470
24			3770	5990	8940	12720	17450	23230	30160
25				5750	8580	12220	16700	22300	28950
26				5530	8250	11750	16110	21440	27840
27				5320	7940	11310	15510	20650	26810
28					7660	10910	14960	19910	25850
29					7400	10530	14440	19230	24960
30					7150	10180	13960	18580	24130
31						9850	13510	17990	23350
32						9540	13100	17420	22620
33						9250	12690	16900	21930
34							12320	16400	21280
35							11970	15930	20680
36							11640	15490	20110
37								15070	19560
38								14670	19050
39								14300	18560
40								13940	18100

SQUARE TIMBER POSTS

OAK

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4"x4"	6"x6"	8"x8"	10"x10"	12"x12"	14"x14"	16"x16"	18"x18"	20"x20"
	11680								
4	11140	26280							
5	10320	26280							
6	9500	25060	46720						
7	8690	23830	46180						
8	7870	22610	44540						
9	7060	21380	42910	73000 71640					
10	6240	20160	41280	69600	105120 105120				
11		18940	39650	67560	102670				
12		17710	38020	65520	100220	143040 142130			
13		16490	36380	63480	97780	139270			
14		15260	34750	61440	95330	136420	186480 184700		
15		14040	33120	59400	92880	133560	181440	236520 236520	
16			31490	57360	90430	130700	178180	232850	
17			29860	55320	87980	127850	174910	229180	292080 290640
18			28220	53280	85540	124990	171650	225500	286560
19			26590	51240	83090	122140	168380	221830	282480
20			24960	49200	80640	119280	165120	218160	278400
22				45120	75740	113570	158590	210820	270240
24				41040	70850	107860	152060	203470	262080
26					65950	102140	145540	196130	253920
28					61060	96430	139010	188780	245760
30					56160	90720	132480	181440	237600

Courtesy Carnegie Steel Co.

ROUND TIMBER POSTS

OAK

Safe Load in Pounds, for Direct Loads

Length of Post, Feet	4" Dia.	6" Dia	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.
4	9170 8750								
5	8110	20840 20540							
6	7470	19680							
7	6820	18720	36690 36270						
8	6180	17760	34930						
9	5540	16800	33700	57380 56270					
10	4900	15830	32420	54650	82560 82560				
11		14870	31140	53060	80640				
12		13910	29860	51460	78720	112380 111630			
13		12950	28580	49860	76790	109380			
14		11990	27290	48260	74870	107140	146780 145070		
15		11030	26010	46650	72950	104900	142500	185760 185760	
16			24730	45050	71030	102660	139940	182880	229340
17			23450	43450	69100	100410	137380	180000	226270
18			22170	41850	67180	98170	134810	177110	225060
19			20890	40240	65260	95930	132250	174230	221860
20			19600	38640	63340	93680	129690	171340	218660
22				35440	59490	89200	124560	165570	212250
24				32230	55640	84710	119430	159810	205840
26					51800	80220	114300	154040	199430
28					47950	75740	109180	148270	193020
30					44110	71250	104050	142500	186610

SQUARE TIMBER POSTS

YELLOW PINE, LONG LEAF

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4"x4"	6"x6"	8"x8"	10"x10"	12"x12"	14"x14"	16"x16"	18"x18"	20"x20"
4	32 0 12540								
5	11680	29520 29520							
6	10820	28220							
7	9950	26930	52 4 0 51900						
8	9090	25630	50180						
9	8220	24340	48450	82000 80560					
10	7360	23040	46720	78400	118080 118080				
11		21740	44990	76240	115490				
12		20450	43260	74080	112900	160720 159710			
13		19150	41540	71920	110300	156690			
14		17860	39810	69760	107710	153660	209920 207620		
15		16560	38080	67600	105120	150640	204160	265680 265680	
16			36350	65440	102530	147620	200700	261790	328000
17			34620	63280	99940	144590	197250	257900	326560
18			32900	61120	97340	141570	193790	254020	322240
19			31170	58960	94750	138540	190340	250130	317920
20			29440	56800	92160	135520	186880	246240	313600
22				52480	86980	129470	179970	238460	304960
24				48160	81790	123420	173060	230690	296320
26					76610	117380	166140	222910	287680
28					71420	111330	159230	215140	279040
30					66240	105280	152320	207360	270400

ROUND TIMBER POSTS

YELLOW PINE, LONG LEAF

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4" Dia.	6" Dia.	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.
4	10300 9850								
5	9170	23190 23190							
6	8500	22170							
7	7820	21150	41220 40770						
8	7140	20130	39410						
9	6460	19110	38050	64400 63270					
10	5780	18100	36700	61580	92740 92740				
11		17080	35340	59880	90700				
12		16060	33980	58180	88670	126230 125440			
13		15040	32620	56490	86630	123060			
14		14020	31270	54790	84600	120690	164870 163060		
15		13010	29910	53090	82560	118310	160350	208670 208670	
16			28550	51400	80530	115940	157630	205610	
17			27190	49700	78490	113560	154920	202560	257610 256480
18			25810	48000	76450	111190	152200	199500	253090
19			24480	46310	74420	108810	149490	196450	249690
20			23120	44610	72380	106440	146780	193400	246300
22				41220	68310	101690	141350	187290	239520
24				37830	64240	96940	135920	181180	232730
26					60170	92190	130490	175080	225940
28					56100	87440	125060	168970	219160
30					52030	82690	119630	162860	212370

SQUARE TIMBER POSTS

YELLOW PINE, SHORT LEAF

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4"x4"	6"x6"	8"x8"	10"x10"	12"x12"	14"x14"	16"x16"	18"x18"	20"x20"
4	9840 9410								
5	8760	22140 22140							
6	8110	21170							
7	7460	20200	39360 38930						
8	6820	19220	37630						
9	6170	18250	36340	61500 60420					
10	5520	17280	35040	58800	88560 88560				
11		16310	33740	57180	86620				
12		15340	32450	55560	84670	120540 119780			
13		14360	31150	53940	82730	117520			
14		13390	29860	52320	80780	115250	157400 155710		
15		12420	28560	50700	78840	112980	153120	199260 199260	
16			27260	49080	76900	110710	150530	196340	
17			25970	47460	74950	108440	147940	193430	246000 244920
18			24670	45840	73010	106180	145340	190510	241680
19			23380	44220	71060	103910	142750	187600	238440
20			22080	42600	69120	101640	140160	184680	235200
22				39360	65230	97100	134980	178850	228720
24				36120	61340	92570	129790	173020	222240
26					57460	88030	124610	167180	215760
28					53570	83500	119420	161350	209280
30					49680	78980	114240	155520	202800

Courtesy Carnegie Steel Co.

ROUND TIMBER POSTS

YELLOW PINE, SHORT LEAF

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4" Dia.	6" Dia.	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.
4	7730 7390								
5	6880	17390 17390							
6	6370	16630							
7	5860	15860	30910 30570						
8	5350	15100	29560						
9	4850	14340	28540	48300 47450					
10	4340	13670	27520	46180	69550 69550				
11		12810	26500	44910	68030				
12		12050	25490	43640	66500	94670 94080			
13		11280	24470	42370	64970	92300			
14		10520	23450	41090	63450	90520	128880 122300		
15		9760	22430	39820	61920	88730	120260	166800 156500	
16			21410	38550	60390	86950	118230	154210	
17			20400	37280	58870	85170	116190	151920	188210 192360
18			19380	36000	57340	83390	114150	149630	189820
19			18360	34730	55810	81610	112120	147340	187270
20			17340	33460	54290	79830	110080	145050	184730
22				30910	51230	76270	106010	140470	179640
24				28370	48180	72700	101940	135890	174550
26					45130	69140	97870	131310	169460
28					42070	65580	93800	126730	164370
30					39020	62020	89720	122150	159280

SQUARE TIMBER POSTS

WHITE PINE, SPRUCE

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4"x4"	6"x6"	8"x8"	10"x10"	12"x12"	14"x14"	16"x16"	18"x18"	20"x20"
4	10400 9920								
5	9200	23400 23400							
6	8480	22320							
7	7760	21240	41600 41120						
8	7040	20160	39680						
9	6320	19080	38240	65000 63800					
10	5600	18000	36800	62000	93600 93600				
11		16920	35360	60200	91440				
12		15840	33920	58400	89280	127400 126560			
13		14760	32480	56600	87120	124040			
14		13680	31040	54800	84960	121520	166400 164480		
15		12600	29600	53000	82800	119000	161600	210600 210600	
16			28160	51200	80640	116480	158720	207360	
17			26720	49400	78480	113960	155840	204120	260000 258800
18			25280	47600	76320	111440	152960	200880	255200
19			23840	45800	74160	108920	150080	197640	251600
20			22400	44000	72000	106400	147200	194400	248000
22				40400	67680	101360	141440	187920	240800
24				30800	63360	96320	135680	181440	233600
26					59040	91280	129920	174960	226400
28					54720	86240	124160	168480	219200
30					50400	81200	118400	162000	212000

ROUND TIMBER POSTS

WHITE PINE, SPRUCE

Safe Loads in Pounds, for Direct Loads

Length of Post, Feet	4" Dia.	6" Dia.	8" Dia.	10" Dia.	12" Dia.	14" Dia.	16" Dia.	18" Dia.	20" Dia.
4	8170 7790								
5	7230	18880 18380							
6	6660	17530							
7	6100	16680	32670 32300						
8	5530	15830	31170						
9	4960	14990	30030	51050 50110					
10	4400	14140	28900	48700	73510 73510				
11		13290	27770	47280	71820				
12		12440	26640	45870	70120	106060 99400			
13		11590	25510	44450	68420	97420			
14		10740	24380	43040	66730	95440	130690 129180		
15		9900	23250	41630	65030	93460	126920	165410 165410	
16			22120	40210	63340	91480	124660	162860	
17			20990	38800	61640	89500	122400	160320	204800 203260
18			19860	37390	59940	87530	120140	157770	200430
19			18720	35970	58250	85550	117870	155230	197610
20			17590	34560	56550	83570	115610	152680	194780
22				31730	53160	79610	111090	147590	189120
24				28900	49760	75650	106560	142500	183470
26					46370	71690	102040	137410	177820
28					42980	67730	97520	132320	172160
30					39580	63780	92990	127240	166510

LUMBER TABLE

Size in inches	LENGTHS IN FEET							
	10	12	13	14	16	18	20	22
1 x 2	1¾	2	2⅓	2⅓	2⅔	3	3⅓	3⅔
1 x 3	2½	3	3¼	3½	4	4½	5	5½
1 x 3½	2⅓	3½	3⅓	4⅓	4⅔	5¼	5⅚	6⅓
1 x 4	3⅓	4	4⅓	4⅔	5⅓	6	6⅔	7⅓
1 x 5	4⅙	5	5⅓	5⅚	6⅔	7½	8⅓	9⅙
1 x 6	5	6	6½	7	8	9	10	11
1 x 8	6⅔	8	8⅔	9⅓	10⅔	12	13⅓	14⅔
1 x 9	7½	9	9¾	10½	12	13½	15	16½
1 x 10	8⅓	10	10⅚	11⅔	13⅓	15	16⅔	18⅓
1 x 12	10	12	13	14	16	18	20	22
1 x 13	10⅚	13	14⅓	15⅙	17⅓	19½	21⅔	23⅚
1 x 14	11⅔	14	15⅙	16⅓	18⅔	21	23⅓	25⅔
2 x 3	3⅓	3¾	4⅓	4⅔	5	5⅝	6¼	6⅞
2 x 4	4⅓	5	5⅔	6⅓	6⅔	7½	8⅓	9⅙
2 x 5	5⅔	6¼	6⅞	7⅔	8⅓	9⅜	10⅓	11⅓
2 x 6	6¼	7½	8⅓	8¾	10	11¼	12½	13¾
2 x 8	8⅓	10	10⅔	11⅔	13⅓	15	16⅔	18⅓
2 x 9	9⅜	11¼	12⅓	13⅛	15	16⅞	18¾	20⅝
2 x 10	10⅓	12½	13⅓	14⅔	16⅔	18¾	20⅚	22¾
2 x 12	12½	15	16¼	17½	20	22½	25	27½
2 x 3	5	6	6½	7	8	9	10	11
2 x 4	6⅔	8	8⅔	9⅓	10⅔	12	13⅓	14⅔
2 x 9	15	18	19½	21	24	27	30	33
2 x 10	16⅔	20	21⅔	23⅓	26⅔	30	33⅓	36⅔
4 x 4	13⅓	16	17⅓	18⅔	21⅓	24	26⅔	29⅓
5 x 5	20⅚	25	27⅛	29⅛	33⅓	37½	41⅔	45⅚
6 x 6	30	36	39	42	48	54	60	66
8 x 8	53⅓	64	69⅓	74⅔	85⅓	96	106⅔	117⅓
8 x 10	66⅔	80	86⅔	93⅓	106⅔	120	133⅓	149⅓

Courtesy Carnegie Steel Co.

Board Measure

Number of Feet, Board Measure, per Lineal Foot for Various Widths and Thicknesses.

Width of Board, In.	Thickness of Board, Inches												
	1	1½	2	2½	3	3½	4	5	6	7	8	9	10
3	0.250	0.375	0.500	0.625	0.750	.....	.....	.....	.....	.....	.....	.....	.....
3½	.292	.438	.583	.729	.875	1.021	.....	.....	.....	.....	.....	.....	.....
4	.333	.500	.667	.833	1.000	1.167	1.333	.....	.....	.....	.....	.....	.....
4½	.375	.563	.750	.938	1.125	1.313	1.500	.....	.....	.....	.....	.....	.....
5	.417	.625	.833	1.042	1.250	1.457	1.666	2.083	.....	.....	.....	.....	.....
6	.500	.750	1.300	1.250	1.500	1.750	2.000	2.500	3.000	.....	.....	.....	.....
7	.583	.875	1.167	1.458	1.750	2.042	2.333	2.917	3.500	4.083	.....	.....	.....
8	.667	1.000	1.333	1.667	2.000	2.333	2.667	3.333	4.000	4.667	5.333	.....	.....
9	.750	1.125	1.500	1.875	2.250	2.625	3.000	3.750	4.500	5.250	6.000	6.750	.....
10	.833	1.250	1.667	2.083	2.500	2.917	3.333	4.167	5.000	5.833	6.667	7.500	8.333
11	.917	1.375	1.833	2.292	2.750	3.208	3.667	4.583	5.500	6.417	7.333	8.250	9.167
12	1.000	1.500	2.000	2.500	3.000	3.500	4.000	5.000	6.000	7.000	8.000	9.000	10.00
13	1.083	1 625	2.167	2.708	3.250	3.792	4.333	5.417	6.500	7.583	8.667	9.750	10.83
14	1.167	1.750	2.333	2.917	3.500	4.083	4.667	5.833	7.000	8.167	9.333	10.50	11.67
15	1.250	1.875	2.500	3.125	3.750	4.375	5.000	6.250	7.500	8.750	10.00	11.25	12.50
16	1.333	2.000	2.667	3.333	4.000	4.667	5.333	6.667	8.000	9.333	10.67	12.00	13.33
18	1.500	2.250	3.000	3.750	4.500	5.250	6.000	7.500	9.000	10.50	12.00	13.50	15.00
20	1.667	2.500	3.333	4.167	5.000	5.833	6.667	8.333	10.00	11.67	13.33	15.00	16.67

SPECIFIC GRAVITY AND WEIGHT OF WOOD

	Gravity Specific	Average Specific Gravity	Weight per Cubic Foot Pounds
Alder	0.56 to 0.80	0.68	42
Apple	.73 to .79	.76	47
Ash	.60 to .84	.72	45
Bamboo	.31 to .40	.35	22
Beech	.62 to .85	.73	46
Birch	.56 to .74	.65	41
Box	.91 to 1.33	1.12	70
Cedar	.49 to .75	.62	39
Cherry	.61 to .72	.66	41
Chestnut	.46 to .66	.56	35
Cork	.24 to ...	.24	15
Cypress	.41 to .66	.53	33
Dogwood	.76 to ...	.76	47
Ebony	1.13 to 1.33	1.23	76
Elm	.55 to .78	.61	38
Fir	.48 to .70	.59	37
Gum	.84 to 1.00	.92	57
Hackmatack	.59 to ...	.59	37
Hemlock	.36 to .41	.38	24
Hickory	.69 to .94	.77	48
Holly	.76 to ...	.76	47
Hornbeam	.76 to ...	.76	47
Juniper	.56 to ...	.56	35
Larch	.56 to ...	.56	35
Lignum Vitae	.65 to 1.33	1.00	62
Linden	.604 to ...	...	37
Locust	.728 to ...	...	46
Mahogany	.56 to 1.06	.81	51
Maple	.57 to .79	.68	42
Mulberry	.56 to .90	.73	46
Oak, Live	.96 to 1.26	1.11	69
Oak, White	.69 to .86	.77	48
Oak, Red	.73 to .75	.74	46
Pine, White	.35 to .55	.45	28
Pine, Yellow	.46 to .76	.61	38
Poplar	.38 to .58	.48	30
Spruce	.40 to .50	.45	28
Sycamore	.59 to .62	.60	37
Teak	.66 to .98	.82	51
Walnut	.50 to .67	.58	36
Willow	.49 to .59	.54	34

Cast iron is approximately 17½ times heavier than ordinary kiln-dried wood used in common patterns.

STRENGTH OF MATERIALS

Stresses per Square Inch

Metals and Alloys	Stresses in Thousands of Pounds: Tension, Ultimate	Elastic Limit	Compression, Ultimate	Bending, Ultimate	Shearing, Ultimate	Modulus of Elasticity, Pounds	Elongation, %
Aluminum, cast	15	6.5	12		12	11,000,000	
" bars, sheets	24-28	12-14					
" wire, hard	30-65	16-30					
" " annealed	20-35	14					
" 2—7% Ni, Cu, Fe, etc.	40-50	25					
Aluminum Bronze, 5% to 7½% Al	75	40	120				
" " 10% Al	85-100	60					
Copper, cast	25	6	40	22	30	10,000,000	
" plates, rods, bolts	32-35	10	32				
" wire, hard	55-65					18,000,000	
" wire, annealed	36	10				15,000,000	
Brass, 17% Zn	32.6	8.2		23 2			26.7
" 23% "		7.6	42	22 3			35.8
" 30% "	28.1	8.8		26.9			20.7
" 39% "	41.1	17.4	75	39			20.7
" 50% "	31	17.9	117	33.5			5.0
" cast, common	18-24	6	30	20	36	9,000,000	
" wire, hard	80						
" " annealed	50	16				14,000,000	
Bronze 8% Sn	28.5	19	42	43.7		10,000,000	5.5
" 13% "	29.4	20	53	34.5			3.3
" 20% "	33		78	56.7			0.04
" 24% "	22	22	114	32			0
" 30% "	5.6	5 6	147	12.1			0
" gun metal, 9 Cu 1Sn	25-55	10		52		10,000,000	
" Manganese, cast 10% Sn	60	30	125				
" " rolled 2% Mn	100	80					
" Phosphorus, cast 9% Sn	50	24					
" " wire 1% P	100						
" Silicon, cast, 3% Si	55						
" " 5% Si	75						
" " wire	108						
" Tobin, cast 38% Zn	66						
" " rolled 1½% Sn	80	40				4,500,000	
" " cold rolled ½% Pb	100						
Delta Metal, cast 55—60% Cu	45						
" " plates 38—40% Zn	55						
" " bars 2— 4% Fe	85						
" " wire 1— 2% Sn	100						
German Silver, 25% Zn, 20% Ni							
Gold, cast	20	4				8,000,000	
" wire	30						
" copper, 5 Au, 1 Cu	50						
Lead, cast	1.8					1,000,000	
" pipe, wire	2.2-2 5					1,000,000	
" rolled sheets	3 3					720,000	
Platinum, wire, unannealed	53						
" " annealed	32						
Silver, cast	40						
Tin, cast	3.5-4.6	1.5-1.8	6	4		4,000,000	
" antimony, 10 Sn, 1 Sb	11						
Zinc, cast	4-6	4	18	7		13,000,000	
" rolled sheets	7-16						

STRENGTH OF MATERIALS

Stresses per Square Inch

Metals and Alloys	Stresses in Thousands of Pounds: Tension, Ultimate	Elastic Limit	Compression, Ultimate	Bending, Ultimate	Shearing, Ultimate	Modulus of Elasticity, Pounds	Elongation, %	Reduction of Area, %
Steel								
Structural Shapes, plates*								
" bridges	60	½ tens.	tensile	tensile	¾ tens.	29,000,000	25	
" buildings	55-65	"	"	"	"	29,000,000	25-21	
" ships	55-65	"	"	"	"	29,000,000	27-23	
Boiler Plates*								
" " flange	55-65	½ tens.	tensile	tensile	¾ tens.	29,000,000	27-23	
" " fire box	52-62	"	"	"	"	29,000,000	29-24	
" " extra soft	45-55	"	"	"	"	29,000,000	33-27	
Rivets*								
" bridges	50	½ tens	tensile	tensile	¾ tens.	29,000,000	30	
" buildings, ships	48-58	"	"	"	"	29,000,000	29-24	
Reinforcement Bars**								
" structural, plain	55-70	33	tensile	tensile	¾ tens.	29,000,000	25-20	
" " deformed	55-70	33	"	"	"	29,000,000	22-18	
" hard, plain	80 min.	50	"	"	"	29,000,000	15	
" " deformed	60 min	50	"	"	"	29,000,000	12.5	
" cold twisted		55	"	"	"	29,000,000	5	
Castings*								
" bridges	65	½ tens.	tensile	tensile	¾ tens.		18	
" ships	60	"	"	"	"		18	
Forgings*								
" soft, low carbon	58	29	tensile	tensile	¾ tens.		28	28
" carbon, not annealed	75	37.5	"	"	"		18	30
" " annealed	70-80	35-40	"	"	"		24-22	30-35
" " oil tempered	80-90	45-55	"	"	"		23-20	40-45
" locomotive	80	40	"	"	"		20	25
" nickel, annealed	80	45-50	"	"	"		24-25	40-45
" " oil tempered	85-95	55-65	"	"	"		24-21	45-50
" axles, carbon steel	80	40	"	"	"		20	25
" " nickel	80	50	"	"	"		25	45
Steel Alloys								
Nickel Steel, 3—4% Ni								
" shapes, plates	80 min.	50 min.	tensile	tensile	¾ tens.		20	
" rivets	70-85	45 min.	"	"	"		23-19	
Copper Steel, 0.5% Cu	60-68	37-38	"	"	"		23-29	48-53
Steel Springs and Wire								
Springs, untempered	65-115	40-70						
Wire, unannealed	120	60						
" annealed	80	40						
" bridge cable	200	95						
Wrought Iron								
Shapes	48	26	tensile	tensile	5/6 tens	28,000,000		
Bars	50	27	"	"	"	28,000,000		
Wire, unannealed	80					15,000,000		
" annealed	60	27				25,000,000		
Cast Iron								
Common	15-18	6	80	30	18-20	12,000,000		
Gray	18-24			25-33				
Malleable	27-35	15-20	46	30	40			

*See Specifications of the Society of Testing Materials, adopted August 16, 1909.

**See Specifications of the Association of American Manufacturers, adopted 1910.

STRENGTH OF MATERIALS

Stresses in Pounds per Square Inch

Building Materials	Ultimate Average Stresses: Compress.	Tension	Bending	Modulus of Elasticity	Safe Working Stresses: Compress.	Bearing	Shearing
Stone							
Bluestone	12,000	1,200	2,500	7,000,000	1,200	1,200	200
Granite, gneiss	12,000	1,200	1,600	7,000,000	1,200	1,200	200
Limestone, marble	8,000	800	1,500	7,000,000	800	800	150
Sandstone	5,000	150	1,200	3,000,000	500	500	150
Slate	10,000	3,000	5,000	14,000,000	1,000	1,000	175
Brick							
Common, good	10,000	200	600				
" medium, burned	11,000						
" hard burned	15,000						
Pressed and paving	6,000						
Cement, Portland							
Neat, 28 days	7,040	740					
" 90 days	7,350	740					
1:3 sand, 28 days	1,290	320					
" 90 days	1,490	340					
Concrete, P. C.		**Reinforced Concrete—Safe Working Stresses***					
1:1½:3, hard stone	2,650						
" soft stone	1,800	Elastic Modulus		{2,000,000 if ult. compression is up to 2,200. 2,500,000 if ult. compression is over 2,200. 3,000,000 if ult. compression is over 2,900.			
" cinders	700						
1: 2 :4, hard stone	2,100	Compression		{22.5% of ult. compression on piers or columns of length not exceeding 12 dia.			
" soft stone	1,500						
" cinders	600	Bearing		{32.5% of ult. compression on surfaces of at least twice the loaded area.			
1:2½:5, hard stone	1,700						
" soft stone	1,200	Shearing		{2.0% of ult. compression, horizontal bars. 3.0% for reinforcement with bent-up bars. 6.0% for thoroughly reinforced webs.			
" cinders	500						
1: 3 :6, hard stone	1,350	Bond		{4% of ult. compression for plain bars. 2% for drawn wire.			
" soft stone	1,000						
" cinders	400						
Masonry							
Granite					420	600	
Limestone, bluestone					350	500	
Sandstone					280	400	
Rubble					140	250	
" coursed					168	250	
Concrete, P. C., 1: 2 :4					350	600	
" " 1:2½:5					280	500	
Brick, common					168	300	
" hard burned					210	300	
Miscellaneous							
Glass, common	30,000	3,000	3,000	8,000,000			
" flooring	10,000	3,000	3,000				
Plaster	700	70					
Terra cotta	5,000						
Ropes, cast steel hoisting		80,000					
" standing, derrick		70,000					
" manila		8,000					
Belts, solid woven, cotton		7,300					
" " " flax		9,900					

For ultimate and working stresses of Structural Timber, see page 349.

*For complete data, see Proceedings of the American Society of Civil Engineers, Vol. XXXIX, No. 2, February, 1913.

Stone Work

Stone walls are measured by the perch (24¾ cubic feet). Openings less than 3 feet wide are counted solid; over 3 feet are deducted, but 18 inches are added to the running measure for each jamb built. Arches are counted solid from their spring. Corners of buildings are measured twice. Pillars less than 3 feet are counted on three sides as lineal, multiplied by fourth side and depth.

It is customary to measure all foundation and dimension stone by the cubic foot. Water tables and base courses by lineal feet. All sills and lintels or ashlar, by superficial feet, and no walls less than 18 inches thick.

The greatest safe load per super. foot on:—

Granite piers	equals	40 tons.
Limestone piers	"	25 "
Sandstone piers	"	15 "
Brickwork in cement	"	3 "
Rubble masonry	"	2 "
Lime Concrete foundations	"	2½"

The height of brick or stone piers should not exceed twelve times their least thickness at base.

Brick Work

Brick work is generally measured by 1000 brick laid in the wall. In consequence of variations in size of bricks, no rule for volume of brick can be exact. The following scale is, however, a fair average:

7	bricks	to a	super.	foot	4"	wall	equals	40 lbs.
14	"	"	"	"	9"	"	"	94 "
21	"	"	"	"	13"	"	"	121 "
28	"	"	"	"	18"	"	"	168 "
35	"	"	"	"	22"	"	"	210 "

Corners are not measured twice as in stone work. Openings over 2 feet square are deducted. Arches are counted from the spring. Fancy work counted 1½ bricks for 1. Pillars are measured on their face only.

A cubic yard of mortar requires 1 cubic yard of sand and 9 bushels of lime, and will fill 30 hods.

One thousand bricks, closely stacked, occupy about 56 cubic feet.

One thousand old bricks, cleaned and loosely stacked, occupy about 72 cubic feet.

One superficial foot of gauged arches requires 10 bricks.

Stock bricks commonly measure 8¾ inches by 4¼ inches by 2¾ inches and weigh from 5 to 6 pounds each.

Paving bricks should measure 9 inches by 4½ inches by 1¾ inches, and weigh about 4½ pounds each.

One yard of paving requires 36 stock bricks, of above dimensions, laid flat, or 52 on edge; and 35 paving brick laid flat, or 82 on edge.

Courtesy Waverly Oil Works Co.

Concrete in Mine Construction

†By H. Colin Campbell.

Increasing scarcity of timber of dimensions suitable for the usual requirements of underground mine construction has, for some years, been a serious problem. This has led to the use of concrete in various ways for many of the requirements heretofore met by timber. Concrete is now being used for lining and fireproofing old frame structures inside and outside the mine, fireproofing and rustproofing structural steel, building stopping, sealing loose rock, waterproofing surfaces which disintegrate under the action of moist air, and in the form of pre-cast units is serving as mine "timber."

Not the least important of the many distinctive advantages possessed by concrete in mine work is the security afforded against fire, which is a constant menace in coal mining. Permanence, which concrete construction expresses in the greatest degree, does away also with the continual maintenance expense necessary to replace timbering which under most mine conditions is short lived.

In a paper by A. F. Allard, chief engineer of the Bunsen Coal Co., Danville, Illinois, will be found a summary of practice in the use of concrete in the mines of Bunsen Coal Co. Mr. Allard is a strong advocate of concrete in mine work. To quote him partly:

> "As a fireproof and permanent material for the lining of shaft walls, concrete is without a rival, and its adaptability for this class of work is well recognized; judging by the large number of concrete shafts, now being constructed. In fact, we have hoisting and ventilating shafts completed from top to bottom without a piece of timber, the lining walls, cross-buntons, and division wall of the air compartment are of concrete, with the guides and stairways of steel. The method of sinking mine shafts by means of the concrete caisson with a steel cutting edge or shoe, through soft and water bearing strata has come into prominent use, for by its weight, penetration to a great depth is possible, rapid sinking progress is made. the flow of water met with is reduced and a great saving in cost of labor and material is obtained by the omission of timber curbing.
>
> From comparative cost data, I find that price per vertical floor of completed concrete lined shaft to be about one-third more than that of the wooden structure; this amount is in the first cost only, for after a few years' time, renewal of timbers would be necessary in the latter."

In the limited space at our disposal it is impossible to cite the numerous instances where concrete is now replacing timber in underground mine workings. One of the most notable and recent instances is that of the Oliver Iron Mining Co., on the Missabe Iron Range, where five shafts, constructed last summer, are lined with concrete sets, while five power plants to operate the shafts are being constructed of concrete block. This work was described in "Engineering Record" for October 31, 1914, reproductions of photographs and drawings illustrating the application of concrete in this particular instance. The experience of the Oliver Iron Mining Co. discloses that timber shaft lining soon decays, and that after 4 or 5 years, shafts so lined require continual and heavy maintenance expenditures, so designs were worked out to substitute concrete mine "timbers" in place of wood. Shaft members were cast in steel forms to shapes of exactly the same dimensions of timber sets for the same size of shaft, thus making unnecessary any changes in the various standards of equipment previously worked out and already in use.

Cement-concrete has been applied in mine workings, especially in shafts, to protect timber and steel construction against fire. A notable instance of this is the Cary Mine, for the Odanah Iron Co., (Pickands-Mather Co., Cleveland, Ohio) which has recently fireproofed the steel members of one of its shafts by applying a protective cement-concrete covering by means of an apparatus known as the "Cement-Gun," which is also used largely in shooting cement into rock seams for the purpose of sealing loose rock and for waterproofing surfaces. In the Cary Mine the entire interior of the shaft was covered with wire mash over which a 2-inch coating of "Gunite" was placed.* The steel work was covered with a galvanized wire netting and a ¾-inch coating of "Gunite" then applied. By this process the shaft has been made fireproof.

That such practices should receive increased attention from mine operators and owners is apparent when one realizes that in case of mine accidents the shaft must be of permanent construction so that it may be relied upon. No matter what may happen to the mine the shaft should be safe against the ravages of fire. It is also apparent that the mine shaft should be waterproof because in a dry shaft the deterioration of steel and woodwork, cages, etc., is greatly reduced and the operation of the shaft is not only made considerably safer but more economical.

Cement coatings applied as just suggested should consist of a 1:3 mixture in which the sand is clean, well graded from coarse to fine, and free from organic or other foreign matter such as clay, etc. Full details of the work of the Cary mine are given in an article in the "Engineering and Mining Journal" for February 27, 1915.

Another interesting paper on the use of concrete in mine work will be found in the Proceedings of the Lake Superior Mining Institute, Vol. 18, and refers to the relining of a shaft at the Chapin Mine, Iron Mountain, Michigan.

Of course, concrete has been used in various other ways in underground mine workings. Concrete has been, and is at the present time, used to an increasing extent in building underground dams and bulkheads, and as in above-ground usuages, has given a good account of itself. In most localities where concrete would be practicable all of the necessary materials are near at hand, or may be readily obtained, another reason for giving preference to concrete.

To obtain success with concrete in any construction, careful attention must be given to selecting and proportioning the materials used with the cement. Sand, and gravel or broken stone are commonly referred to as "aggregates," sand being known as "fine aggregate" and gravel or broken stone as "coarse aggregate." Aggregates must be clean coarse, hard and well-graded. Any coating or film of foreign matter covering the particles will effectively prevent good bond of the cement on and between their surfaces. Aggregates must be coarse because the coarser aggregate presents the smaller relative surface for the same volume, and is also more easily covered with cement and makes a stronger concrete with the same proportion of cement.

A prime requisite in proportioning and mixing concrete is that fine and coarse aggregates shall be kept separate and recombined at the time of proportioning each batch, in definite quantities. A 1:2:4 mixture does not mean, nor is not in any way like, a 1:6 mixture in which the 6 parts represent a volume of natural bank-run or pit-run gravel. Bank-run gravel does not occur in the proper proportions of fine or coarse materials and to secure the maximum density, hence strength and watertightness of concrete, mixtures must be so proportioned that voids shall be reduced to the least possible percentage of the total volume.

*Gunite is a mixture of good sharp sand and Portland cement mixed dry, shot by means of the Cement-Gun with an air pressure of about 35 pounds per square inch, the water being added in the nozzle at the moment the mixture emerges. It is fire and waterproof. It can be applied to old mines as well as new and the work can be done with very little interruption of hoisting.

†With Universal Portland Cement Co.

Particles of aggregate which will pass a ¼-inch screen (one having 4 meshes per lineal inch) are considered as sand; coarse aggregate, either screened gravel or crushed stone, shall all be coarser than ¼-inch, and for ordinary work the maximum diameter should not exceed 1½ inches. One sack of Portland cement (94 pounds net) is considered 1 cubic foot, and each batch of concrete should be some multiple of 1 sack. A 1:2:4 mixture, therefore, means 1 sack of Portland cement, 2 cubic feet of sand, and 4 cubic feet of gravel or broken stone; sand and gravel to conform as regards size, grading and cleanliness, to the specifications already given.

Water used in mixing concrete should also be clean and free from organic matter. The amount required depends largely upon the character of the work to be done. Wherever possible, it is desirable to mix concrete to a "quaky" consistency, so that the mass will readily settle into all parts of the forms in which it is being placed, with a minimum amount of puddling or tamping. If too much water is used the cement-sand mortar will separate from the coarse aggregate. Also, if the forms are not watertight, water will flow out and carry a good deal of cement with it, thus robbing the concrete of its most vital constituent.

The following mixtures are recommended for various types of concrete work:

CONCRETE.

A 1:2:3 mixture for:

- One-course concrete walks and pavements.
- One-course floors.
- Roofs.
- Fence posts, mine timbers, and sills, and lintels without mortar surface.
- Water troughs and tanks.

1:2:4 mixture for:

- Reinforced concrete floors, beams and columns.
- Large engine foundations.
- Work exposed to vibration.

1:2½:4 mixture for:

- Building walls and foundations of underground workings.
- Backing of concrete block and similar cement products.

1:2½:5 mixture for:

- Basement walls and foundations of above ground structures.
- Small engine foundations.
- Base of sidewalks and two-course floors.

1:3:5 mixture for:

- Mass concrete footings.

MORTAR.

1-1 mixture for:

- Facing water tanks.

1-1½ mixture for:

- Wearing course of two-course floors.

1-2 mixture for:

- Scratch coat of exterior plaster.
- Facing blocks and similar cement products.
- Wearing course of two-course walks, street and highway pavements.

1-2½ mixture for:

- Finish coat, exterior plaster.
- Fence posts, when coarse aggregate is not used.

1-3 mixture for:

- Concrete blocks when coarse aggregate is not used.
- Cement drain tile, when coarse aggaregate is not used.

Quantities of sand and gravel or stone requird for a one-bag batch or mortar or concrete, and volume of resulting compacted mortar or concrete.

MIXTURES.			MATERIALS.			VOL. IN CU. FT.	
Cem.	Sand	Grav. or Stone	Cem. in Sacks	Sand Cu. Ft.	Grav. or Stone Cu. Ft.	Mortar	Concrete
1	1.5	..	1	1.5	....	1.75	..
1	2	..	1	2.0	..	2.1	..
1	2.5	..	1	2.5	..	2.5	..
1	3	..	1	3.0	..	2.8	..
1	2	3	1	2	3	..	3.9
1	2	4	1	2	4	..	4.5
1	2.5	4	1	2.5	4	..	4.8
1	3	5	1	3	5	..	5.8

Quantities of cement, sand and gravel or stone required for one cubic yard of compacted mortar or concrete.

MIXTURES.			QUANTITIES OF MATERIALS.				
				Sand		Stone or Gravel	
Cem.	Sand	Grav. or Stone	Cem. in Sacks	Cu. Ft.	Cu. Yds.	Cu. Ft.	Cu. Yds.
1	1.5	..	15.5	23.2	.86	..	..
1	2	..	12.8	25.6	.95	..	..
1	2.5	..	11.0	27.5	1.02	..	..
1	3	..	9.6	28.8	1.07	.	..
1	2	3	7.0	14.0	.52	21.0	.78
1	2	4	6.0	12.0	.44	24.0	.89
1	2.5	4	5.6	14.0	.52	22.4	.83
1	3	5	4.6	13.8	.51	23.0	.85

Stone and gravel equal 45 per cent voids (average) 1 sack cement equals 1 cubic ft. 4 sacks equal 1 bbl.

Based on tables in "Concrete, Plain and Reinforced" by Taylor & Thompson.

AMERICAN LUMBER & MFG. CO.

PITTSBURGH, PA.

Branch Offices:

New York City Baker, Oregon Marinette, Wis Hattiesburg Miss.

Products

Yellow Pine
White Pine
Hard Woods
Fir

Mine Lumber for trellises, bridges, guide shafts, brattice boards, mine rails and miners' houses and building repairs.

We carry a complete line of Flooring, Ceiling, Siding and Framing, we can ship on short notice.

Large and Long Timbers in White Pine, White Oak, Oregon Fir, Hemlock and Long Leaf Yellow Pine for trellises, bridges, boat or mine car building.

Yellow Pine for Tipples and washeries

At our mills at Florala, Ala., we carry large and well assorted stock of Yellow Pine in all grades and thicknesses. Send us your bill and specifications for your lumber requirements for tipples, washeries, miners' houses, guide shafts, etc. We can cut timber any size up to 20x20x50. We exercise the most careful attention in manufacturing, grading and loading timber bills, which is your assurance of getting what you want, when you want it.

Long Leaf Yellow Pine makes the most durable shaft guides and is dressed on four sides or rough as you wish.

We furnish Brattice Boards in all grades of White Pine, Hemlock or Yellow Pine and Mine Rails, of all sizes in Oak or any other Hard Wood. We make a specialty of Mine Timbers and always carry a large stock, so that we are in position to load cars and have them running in the day after your bill is received.

Write or wire for prices delivered in carload lots anywhere in the United States or Canada.

"The Wood of Service"

Have you ever considered the remarkable qualities of Southern Yellow Pine? It is the most useful wood that grows. Thirty-six per cent of all the lumber consumed in the United States is Southern Yellow Pine. See these tables, the result of exhaustive tests by the United States Forest Service, showing the properties of Southern Yellow Pine as compared with other important commercial woods.

Breaking Strength

Woods	Lbs. Stress	Woods	Lbs. Stress
SOUTHERN YELLOW PINE (Longleaf)	8,630		
White Oak	8,160	Post Oak	7,280
Cypress	7,110	White Elm	6,950
Black Ash	6,00	Douglas Fir	6,340
Eastern Hemlock	6,180	Silver Maple	5,820

Crushing Strength

Woods	Lbs. Stress	Woods	Lbs. Stress
SOUTHERN YELLOW PINE (Longleaf)	4,280		
Hickory, Shellbark	3,890	White Oak	3,510
Eastern Hemlock	3,270	Cypress	3,960
White Elm	2,810	Douglass Fir	2,920
Silver Maple	2,490	Black Ash	2,300

Stiffness

Woods	Lbs. Stress	Woods	Lbs. Stress
SOUTHERN YELLOW PINE (Longleaf)	1,662		
Shagbark Hickory	1,532	Cypress	1,378
White Oak	1,214	Douglas Fir	1,242
Eastern Hemlock	1,123	White Elm	1,040
Black Ash	1,033	Silver Maple	943

The U. S. Government Agricultural Bulletin No. 99 says:

"Longleaf Yellow Pine ma ybe had in long pieces, free from serious defects, and possesses great strength and stiffness; in addition to that it has enduring qualities that add much to its value. In a large part of the country it is so universally used that there are few places if importance it does not fill."

Do YOU Use Southern Yellow Pine?

TERHUNE LUMBER COMPANY

244 Oliver Building-Pittsburgh, Penna.

Direct all-rail shipments from our Georgia, Mississippi and Louisiana Mills.
Export shipments to South America and Mexico from Galveston, Texas; New Orleans, La., and Mobile, Ala.
Emergency shipments for quick delivery from Assembling Yards in Baltimore, Md., and Pittsburgh, Pa.

Address All Communications to Pittsburgh, Pa.

Long Leaf Yellow Pine

For permanent construction of TIPPLES, TRESTLES, WASHERS, etc., sawed to order and forwarded direct from mill to your station.

When Timbers or Plank are wanted surfaced the size will be ¼ inch under sawed size.

Boards and Brattice

1x4, 1x6, 1x8, 1x10 and 1x12. Surfaced, one or both sides, also tongued and grooved without extra charge. We prefer to ship 1-inch stock dressed in any manner desired. Standard lengths 10 to 16 feet long.

Lagging, Lining, Etc.

Full assortment always carried, largely 2 inches thick. Separate widths, 4-inch, 6-inch, 8-inch, 10-inch and 12-inch. In lengths 10 to 20 feet long. Also limited supply of 3-inch, 6-inch, 8-inch and 10-inch wide.

Shaft Guides

Our guides are made with a view of "Safety First," and produced from very choicest trees. Furnished in any lengths up to 40 feet—mostly 24 feet, 26 feet, 28 feet, 30 feet and 32 feet.

In ordering, give net dressed size and lengths you want.

Concrete Form Lumber

1-inch and 2-inch always on hand. Dressed as wanted. Without extra charge.

Miners' Houses

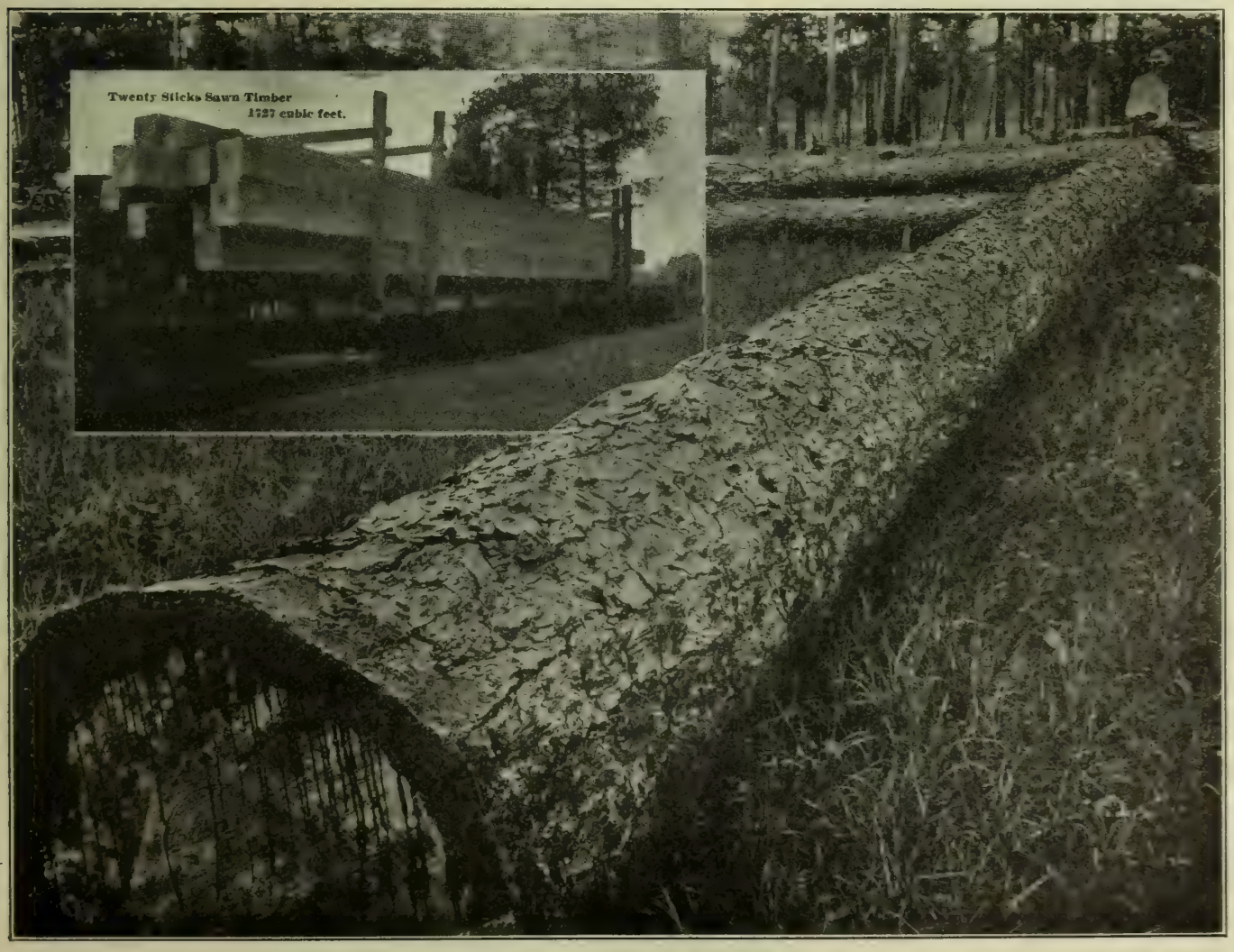
Complete assortment of Lumber suitable for any type house.

Wood Paving Blocks

Untreated Block for use in shop floor or street.

Long Joists—2x8 to 2x14

Assorted lengths up to 30 feet, surface uniformally to standard thickness 1¾ inch for quick loading within three to six days.



Yellow Pine Company of Philadelphia

Office
1409-10-11 Pennsylvania Building,
Philadelphia, Pa.

Long Leaf
and
Short Leaf

Wharves and Yards
30th and Spruce Sts., Schuylkill River,
Philadelphia, Pa.

LONG LEAF YELLOW PINE SHIPPED DIRECT FROM SOUTHERN MILLS.

WASHERY OR TIPPLE CONSTRUCTION.

Bills of timber for Washery or Tipple construction sawed to order and shipped direct from mills in strictly Long Leaf, Un-bled Yellow Pine, either planed or in the rough.

BOARDS AND PLANK

are being constantly manufactured and dried preparatory to shipment either rough or dressed. We usually have available abundant quantities of both the better and lower priced grades for prompt shipment.

SHAFT GUIDES.

Our shaft guides are manufactured by mills that are thoroughly familiar with the rigid specifications and quality required in shaft guides, and they are manufactured with the corner knots eliminated so as to avoid the carriage jar.

IMMEDIATE SHIPMENT FROM OUR STORAGE YARDS IN PHILADELPHIA.

LONG LEAF PINE.

We carry a complete assortment of Long Leaf Yellow Pine in our yards in Philadelphia, ranging from 2 in. x 3 in. up to 16 in. x 16 in., or larger, so that when there is not sufficient time to permit shipment from the mills, we are prepared to fill almost any kind of a yellow pine schedule, shipping the lumber as fast as it can be loaded on cars, one day being ample time within which to have the lumber running.

SHORT LEAF PINE.

We also carry a good assortment of Short Leaf Pine in our yards here, consisting of Boards, Plank and Timbers. Short Leaf Pine is an excellent and economical substitute for long leaf pine for temporary construction, or where not exposed to dampness.



West Side of Derrick No. 1, with E. S. Clothier, Superintendent of Yellow Pine Co., of Philadelphia.

MINING CATALOGUES

C. A. WOOD-PRESERVER COMPANY

56 Liberty Street, New York Wright Building, St. Louis

Chicago—Ft. Dearborn Bldg. Cleveland—Engineers Bldg. Louisville—Starks Bldg.
New Orleans—Audubon Bldg. Salt Lake City—Dooly Bldg.
San Francisco—Rialto Bldg. Los Angeles—Marsh Strong Bldg.
Portland—Ainsworth Bldg. Denver—1011 Glenarm St.

There being no Federal law compelling the sellers of Wood Preservatives to brand the packages with a true statement of what a preservative contains or consists of, it is necessary that careful investigation be made before purchasing. Note—An analysis which does not state the method used is worthless because different methods give different results, hence the following affidavit is executed for your guidance and protection.

STATE OF MISSOURI, } ss.
CITY OF ST. LOUIS. }

I, HARRY H. GERHARD, being duly sworn on my oath say that I am the President of C-A-WOOD-PRESERVER COMPANY, a Missouri corporation and as such and for said corporation I am engaged in selling a wood preserving oil under the name of "C-A-WOOD-PRESERVER." I make the following statements concerning said oil for the purpose of inducing sales thereof and with the intent that these statements be relied on by any person or persons purchasing any of said oil.

Concerning the oil I am engaged in selling, on my oath I say:

1. I am familiar with its analysis and with the method of its production.

2. When properly analyzed, as required by the United States Signal Service, the United States Navy and the New York Dock Department's method of analysis now in force, according to specification for Carbolineum and Similal Wood Preserving Oils, said oil will show the following:

Specific gravity at 38° C	1.11 to 1.13
Flashing Point	Above 120° C.
Burning Point	Above 165° C.
Distillate below 235° C	Not exceeding 2 per cent.
Distillate between 235° C and 300° C	Not exceeding 10 per cent.
PURE LIQUID COAL TAR OIL RESIDUE AT AND ABOVE 300° C	OVER 90 PER CENT.
Tar Acids	Less than 2 per cent.
Sulphonation Residue	Less than 0.25 c. c. (or 0.25%).
Constituents insoluble in benzol	Less than 1 per cent.
Form at 38° C	Liquid.
Ash left on ignition	Not exceeding 1 per cent.

3. It is a true product of Coal Tar free from any adulteration when tested as required by the U. S. Forest Service method in Bulletin No. 112, or otherwise. Furthermore, the distillates between 350 and 400° C, will congeal or solidify on cooling.

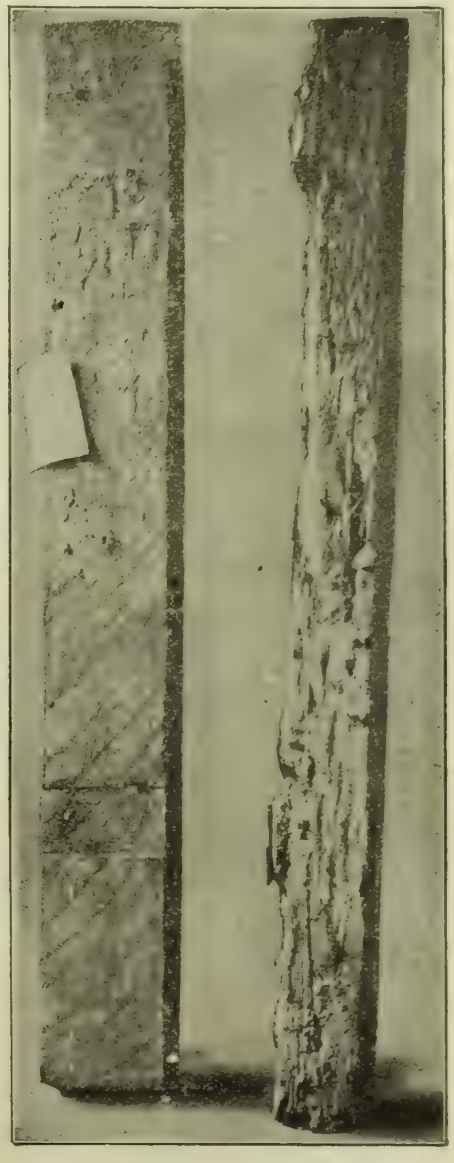
4. It is not a by-product of petroleum, water gas tar or oil tar.

HARRY H. GERHARD.

Subscribed and sworn to before me this 26th day of March, 1915.
(Seal) JENNIE R. FRAME. Notary Public.
My Commission expires December 21, 1917.

An original of the above affidavit will be furnished on request.
Write for prices.





Condition of Treated and Untreated Ties from Test Track of Denver City Tramway Co., Denver, Colo. These ties were placed in adjacent tracks, September 20, 1904. Removed March 11, 1909. The tie on the left was immersed in "C-A-WOOD-PRESERVER" before placing in track. The one on the right had no treatment. All treated ties placed in 1904 still in track April 1915. This company has treated over 500,000 ties with our "C-A-Wood-Preserver."

SAMUEL CABOT, Inc.

Manufacturing Chemists

1133 Broadway
NEW YORK, N. Y.

141 MILK STREET, BOSTON, MASS.

24 W. Kinzie Street
CHICAGO, ILL.

Products

Conservo Wood Preservative. Preserves ties, timbers, pilings, planks, bridges, boats, posts, poles, sills, sleepers, etc., from wet and dry rot, insects and worms.

Damp-proofing; Insulating and Deadening Quilt; Creosote Shingle Stains; Waterproof Brick and Cement Stains; Protective Paint for Metal.

Description

Conservo is a compound of high boiling coal-tar distillate, non-volatile, insoluble, non-viscous, and antiseptic. Its tone on wood is rich butternut brown. It may be specified by the following average analysis:

Specific gravity	1.06 to 1.10		
Flash point (open cup) about	125° C.		
Burning point about	150° C.		
Distilling points	205° C.	about	1.00 per cent
	205° C. to 235° C.	about	2.78 per cent
	235° C. to 300° C.	about	33.13 per cent
	300° C. to 360° C.	about	41.31 per cent
Balance in retort, liquid.			
Viscosity (Engler Viscosimiter)	142 sec. at 16° C.		
Viscosity	80 sec. at 35° C.		
Antiseptic Phenols or Tar Acids			7 to 10 per cent
Ash on ignition			.003 per cent

Advantages

Conservo is a scientific product made, not to copy other goods, but to cover the three cardinal principles of pood preservation, i. e.:

(1) Penetrating power—to get into the wood.
(2) Permanence—to stay in the wood.
(3) Sterilizing power—to sterilize the wood.

Penetration

No preservative can preserve the wood unless it penetrates; and Conservo is so limpid that its penetrating power is unique. Its viscosity (viscosity is that "coal molasses" quality that prevents most wood preservatives from penetrating) is only one-fifth to one-half as great as the very heavy preservatives.

Permanence

It not only goes more quickly and deeply into the wood than more viscous prodcts; but, when it gets in, it stays in, because it is insoluble and non-volatile. It will not dissolve out nor evaporate out. Preservatives that cannot penetrate remain on the surface of the wood, and are washed off by the first rains.

Sterilizing

Conservo has always carried the proper percentage—7 to 10 per cent—of Phenols or Tar Acids to sterilize the wood and poison the bacteria that produce decay, although other preservatives have until recently contained only a trace of these. The Phenols also combine with the lignin of the wood and increase the penetrating power, which is of special value for unseasoned wood. It has also been demonstrated that the Phenols in Conservo form permanent asphaltic bases in the wood, that make the preservative results permanent.

Non-Inflammable

Conservo is non-inflammable; and, as it gives off a cooling vapor under flame, it actually makes the wood less inflammable after drying than untreated wood.

Application

Conservo is so limpid, and has such great penetrating power, that it can be effectively applied without heating. At normal temperatures this quality is of great importance where heating arrangements are not feasible; but heat should always be used, if possible, because it increases the limpidity, and helps to expel moisture from the wood.

Conservo can be applied by any method preferred. The most common methods are:

(1) Brush coating, like paint, with a wide flat brush or a mop brush for speed, or with a spraying machine.

(2) Dipping, using tanks of appropriate size for the lumber to be dipped.

(3) Soaking, using tank equipment for either cold or alternate hot and cold soaking, as in the open-tank vacuum method.

Temperature for hot treatment, from about 170° Fahr. for seasoned timber to about 225° Fahr. for unseasoned timber. The length of treatment depends upon the condition and character of the timber, seasoned and porous woods requiring a shorter treatment than unseasoned or dense woods.

Cost

Price of Conservo, 40 cents per gallon in barrels, f. o. b. Boston. The cost of treating depends upon the method selected, the character and condition of the wood, and the economy of hondling, which includes wages, waste, etc. The material for two-coat work costs from one-tenth to four-tenths of a cent per square foot, according to the surface.

Covering Capacity

Brush Coating—One gal. covers about 100 sq. ft. of rough sawed lumber, two coats; one gal. covers about 200 sq. ft. of rough hewn lumber, two coats; one gal. covers about 250 sq. ft. of dressed lumber, two coats.

The amount varies somewhat, according to the character and condition of the wood; but these are safe and conservative figures.

Dipping—About the same as brush coating, if the Conservo is drained back into the dipping tank to prevent waste.

Soaking—The covering capacity varies so greatly for both methods of soaking, owing to differences in wood, heating, length of immersion, etc., that it is impossible to give exact figures; but simple soaking for a short time will take about twice as much as dipping; the vacuum process, from four to twelve cubic feet per gallon; and, by the expensive impregnation pressure process, the wood can be made to take up two or three gallons per cubic foot.

ASPHALT READY ROOFING CO.

Room 459

9 Church St., New York

Works:
Jones Point, New York
on the Hudson

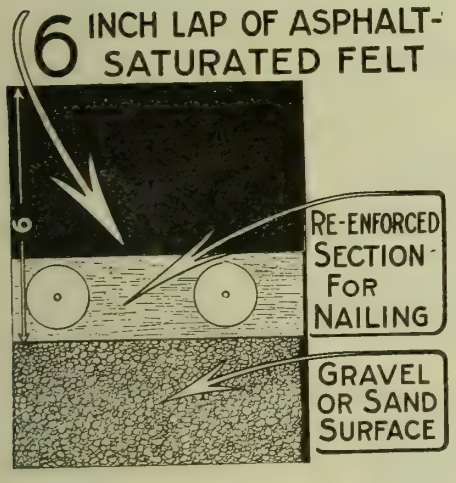
Products.

Asphalt Shingles, Asphalt Roofing Surfaced with Sand, Gravel, Feldspar and Red or Green Crushed Slate, Smooth Surfaced Roofings. Asphalt Roofing and Sheathing Felts.

Protection Brand Roofing.

Mineral surfaced—Has 6 inch lap (Pat. Nov. 18, 02). Laid with nails covered. Joints absolutely tight.





6 inch lap before Joint is made.

Instead of being the weakest part, the joints are strongest part of Protection Brand Roofing.

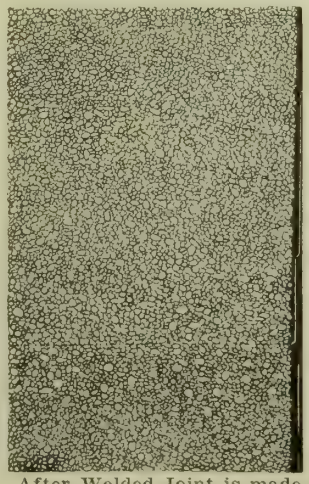
The mineral surface will not slide and needs no painting.

Results have shown that the Protection Brand Roofing gives excellent service on buildings near Coke Ovens where gases are very severe and eat exposed nails, and conditions are bad.

Can be laid right over old wood shingle roofs.

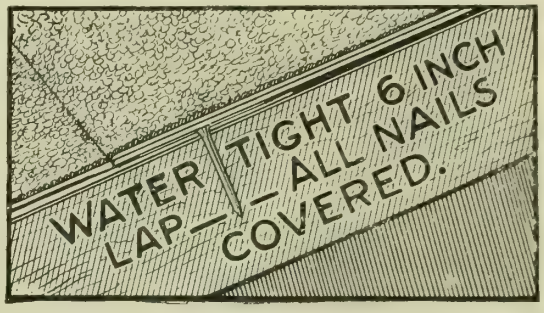
Used for years by many of the largest Coal Mining Companies in the United States.

Furnished in rolls which cover 1 square (100 square feet).



After Welded Joint is made, all nails covered.

This roofing is wound on a 6-inch spindle which prevents the cracks and kinks so often found in roll roofings, prevents its being damaged in transit and causes it to unroll easily in cold weather.



(See the concealed nail.)

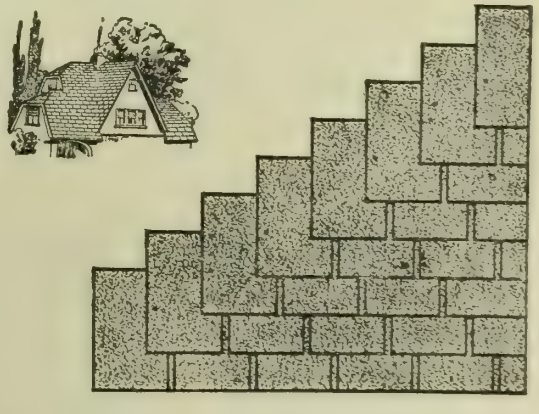
This is the Protection Brand roofing Leak Proof Joint—Rain or Gases cannot reach the nails. They are covered and protected.

Hudson Shingles

quickly laid by carpenters. Very desirable for mine office buildings, residences, bungalows, etc.



Hudson Shingles require no painting or staining. They resist fire. They are packed in convenient boxes each containing one quarter square. They are carefully inspected, and there is practically no waste in application.



Free Book

We will gladly send postpaid our new book entitled "Shingling and Roofing," samples, prices, etc.

H. W. JOHNS-MANVILLE CO.

BRANCH OFFICES:

Akron	Boston	Columbus	Duluth	Kansas City	Minneapolis	Philadelphia	St. Paul	Toledo
Albany	Buffalo	Dallas	Galveston	Los Angeles	Newark,	Pittsburgh	Salt Lake City	Washington
Atlanta	Chicago	Dayton	Houghton	Louisville	New Orleans	Portland,	San Francisco	Wilkes-Barre
Baltimore	Cincinnati	Denver	Houston	Memphis	New York	Rochester	Seattle	Youngstown
Birmingham	Cleveland	Detroit	Indianapolis	Milwaukee	Omaha	St. Louis	Syracuse	

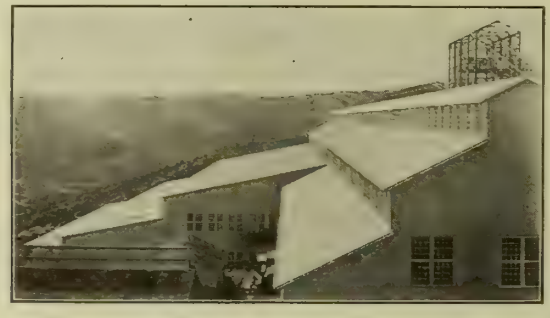


Johns-Manville Service to Mines

It is by combining the mining engineers' intimate knowledge of his plant conditions with our own representatives' knowledge of J-M Products that we can serve most efficiently. Mining companies that use Johns-Manville Service find it a real help. If you haven't used it, get in touch with our nearest branch.

J-M Asbestos Ready Roofing

This roofing offers excellent protection against fire and is immune to the action of gases and acid fumes. As it contains nothing to deteriorate, it never requires painting, coating or graveling, hence it puts an end to never-ending roof repair and expense.



Miami Copper Company, Miami, Arizona.
Note the clean, white appearance of J-M Asbestos Roofing. This is from an unretouched photograph.

J-M Asbestos Roofing has been in service on many buildings for 25 to 30 years without costing a cent for repairs. It is the cheapest of all roofings from the cost-per-year standpoint.

Made by crushing solid asbestos rock and compressing the long fibres into a dense felt. Several layers of this rock felt are then permanently cemented together with a compound of Trinidad Lake and other asphalts, forming a light weight, all mineral roof covering, in rolls ready to lay. Asbestos gives attractive white finish. No unsightly smears. J-M Roofing Fasteners eliminate cement. We also manufacture J-M REGAL ROOFING, the most durable of all "rubber" type roofings. Made by saturating a high-grade wool felt with the same waterproofing compound used in J-M Asbestos Roofing.

J-M Corrugated Asbestos Roofing

A practically indestructible roofing made by applying alternate layers of Asbestos felt (the same material used in J-M Asbestos Ready Roofing) and asphalt compound to both sides of heavy sheet metal. The metal is then corrugated. Cheaper than corrugated iron because it never needs painting and lasts longer.

J-M Asbestos and J-M Regal Roofings are examined and approved by the Underwriter's Laboratories under the Direction of the National Board of Fire Underwriters.

J-M High Temperature Cements

make firebrick and boiler settings last longer. They reduce maintenance costs. Outlast fire clay many times, resist temperatures up to 3100 deg. F.

J-M Asbesto-Metallic Brake Blocks

If you are interested in a material for your brakes and clutches that will operate for months without appreciable wear, if you can use a brake block that will not even char under great frictional heat and that is unaffected by water, climate, oil or grease, then try J-M Asbesto-Metallic Brake Blocks.—**For structural reasons.** If you need accurate braking, a brake that will respond to the slightest pressure or the "hardest jam" without feeling the shock, try J-M Asbesto-Metallic Brake Blocks.—**For Operating Reasons.** If you want your brake to be a "safety" brake, that will not slip or creep, even in the presence of oil, grease or water try J-M Asbesto-Metallic Brake Blocks.—**For safety reasons.**

J-M Fireproof Cold Water Paint

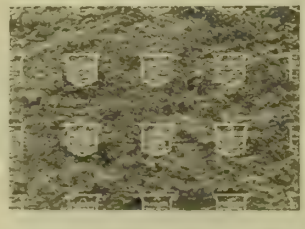
The white reflecting surface of this paint applied in mines greatly increases the interior illumination, thereby adding to the efficiency of operatives and tending to prevent accidents and loss of life. Also used in the station, around the pumps, in the ore bins and around the shaft opening. Costs only 1-6 as much as oil paint. Highly sanitary. Retards fire. Easily applied.

J-M Asbesto-Sponge Felted Pipe Covering

Most efficient of all pipe insulations. Saves 75% of the fuel lost by radiation through ordinary coverings. Made of pure Asbestos fibre and finely ground sponge, built up in laminated form. Each layer contains **millions** of dead air cells—the most efficient form of insulation. Extremely tough but flexible. Withstands vibration and hard usage. Never crumbles and loses its insulating value. Not affected by moisture.

J-M Permanite Packing

When you make up a J-M Permanite Packed Joint it's packed forever. No more looking for leaks and no more time taken in following up all along the line. J-M Permanite is an "all-over the plant" packing, not alone a Steam packing. It will take care of any packing requirement whether steam or water at any pressure or temperature; ammonia, acid or alkaline solutions.



J-M Permanite is resilient and strong. It won't stick to the flanges, burn or break down. When you have tried J-M Permanite you will realize that it is just another evidence of Johns-Manville Service.

J-M Electrical Supplies

"Noark" Enclosed Fuses; Fuse, Service and Subway Boxes; Service Meter Protective Devices.

Westinghouse Tungsten Lamps.

J-M Trolley Line Material—Railbonds, J-M Electric Heaters, J-M Friction Tapes.

"Moulded Mica" Weatherproof Sockets.

"Moulded Mica"—J-M Bakelite—Electrobestos and Vulcabeston Insulation.

J-M Fibre Conduit.

J-M Niagrite Fireproof Cable Insulation.

J-M Ebony Asbestos Wood.

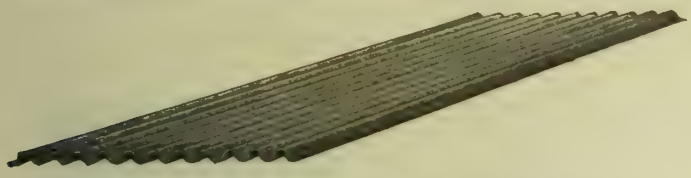
J-M Dry Batteries; Battery Ammeters; Battery Connectors. J-M Indurated Fibre Specialties.

Write for booklets.

KEASBEY & MATTISON COMPANY
AMBLER, PENNA.

BRANCH OFFICES IN THE LARGER CITIES

Asbestos Corrugated Sheathing



Used for roofing or siding elevators, rolling mills, train sheds, warehouses, breakers, tipples, or any kind of building where a PERMANENT roof is desired.

Will not rust or decay. Indestructible. Never requires paint.

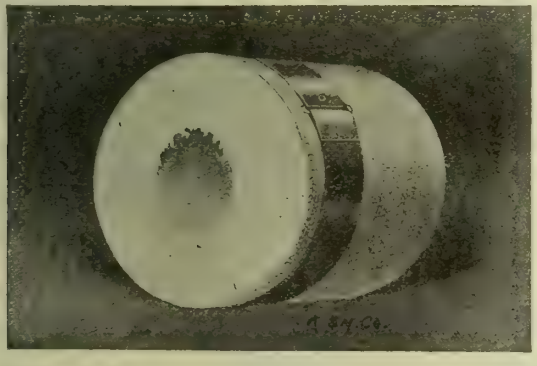
Made in sheets 27½″ wide—in lengths from 4 to 10 feet, inclusive.

Applied directly on wood or steel purlins.

Composed of Portland Cement and Asbestos Fibre, mixed in the presence of a large volume of water and subjected to tremendous hydraulic pressure, this material, like all other concrete products, IMPROVES with age.

It is comparatively light in weight, from 2.8 to 3 lbs. to the square foot, and as a substitute for galvanized iron roofing or siding is unequalled.

85% Magnesia Covering



We are the original manufacturers of 85% Magnesia Pipe Coverings—the standard insulation for over 35 years—used by practically all the largest steam users in the country.

Furnished in 3-foot sections from 1″ to 3″ thick, to fit standard pipes ½″ to 10″ in diameter. For larger surfaces we supply curved segments or blocks, tape, canvas and clips.

Sectional Covering finished with a canvas jacket and metal bands. Ells, tees, valves, etc., to match.

Can also supply other pipe and boiler coverings, suitable for all requirements.

Also Asbestos and Magnesia Cements.

K. & M. Wire Inserted Sheet Packing

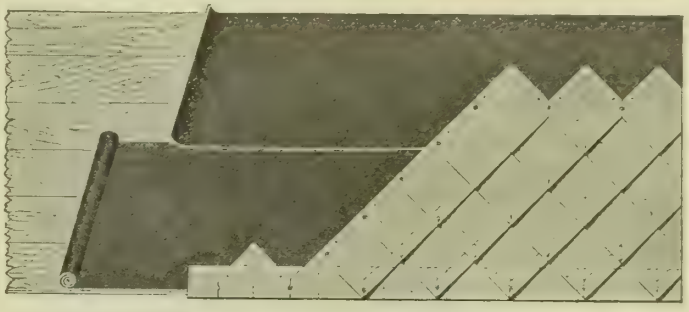
Made from pure asbestos fibre interwoven with brass wire and specially treated.

A high grade packing and suitable for many requirements.

Artificial Roofing Slates
(Asbestos "Century" Shingles)

THE EVERLASTING ROOF. This material, like the Asbestos Corrugated Sheathing, is composed of Portland Cement and Asbestos Fibre, combined in practically the same manner, but made in flat sheets from which the shingle shapes are cut.

Owing to its concrete nature, it improves instead of deteriorating with age, and roofs applied when the material was first manufactured (about nineteen years ago) are as good today as when first put on. Various tests made on this material, by both public and private testing laboratories, tend to show that it is practically everlasting.



French or Diagonal Method of Application
Showing Starting Courses at the Eaves.

These shingles have been used in the United States for about nine years, and during that time approximately 50,000 different buildings have been covered with them.

When applied according to the French Method, illustrated above, they weigh about the same as wooden shingles per square, and very much less than natural slate.

Asbestos "Century" Shingles are admirably adapted for siding, as they do not require paint and the upkeep expense of a building thus treated is therefore reduced to a minimum.

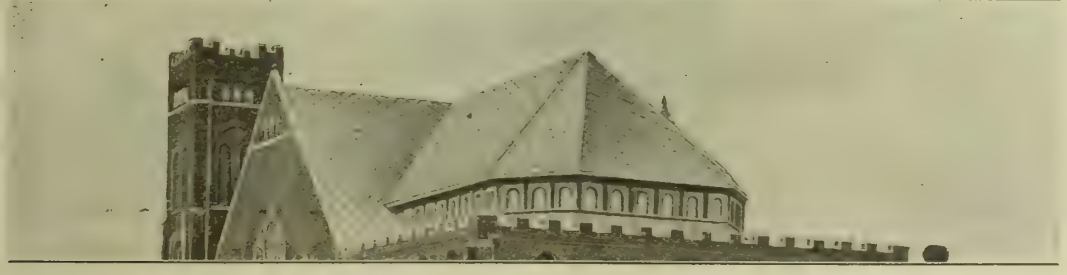
Carried in three colors—Newport Grey, Indian Red and Blue-black.

K. & M. Asbestos Roll Roofing

Made in different weights and plies.
Fireproof. Timeproof. Absolutely reliable.
Write for prices.

Also

Asbestos Papers and Millboards.
Asbestos Cloth Packings of all kinds.
Asbestos Brake Lining.
Asbestos Gaskets of all kinds.
Asbestos Wick and Rope.
Asbestos Twine, Thread and Cord.
Asbestos Cloth of all kinds.
Asbestos Roofings.
Asbestos Furnace Cements.
Etc., Etc., Etc.



IF IT'S MADE OF ASBESTOS WE'VE GOT IT.

Patent Vulcanite Roofing Company

General Office:

49th Street & Oakley Ave.
Chicago, Illinois

Branch Offices:

New York, N. Y., 258 Broadway
Cincinnati, Ohio 114 East Pearl St.
Birmingham, Ala. 2014 Avenue A
Kansas City, Mo. 12th and Crystal Aves.

Factories:
Chicago, Ill.; Kansas City, Mo.; Franklin, Ohio; Anderson, Ind.; San Francisco, Cal.

Guarantee

Vulcanite Roofings are sold under absolute guarantee of quality and wear.

Styles

Individual shingles, and shingles in continuous strips, for residences; in full rolls for houses, garages, barns, sheds, warehouses, tipples, and general mine buildings.

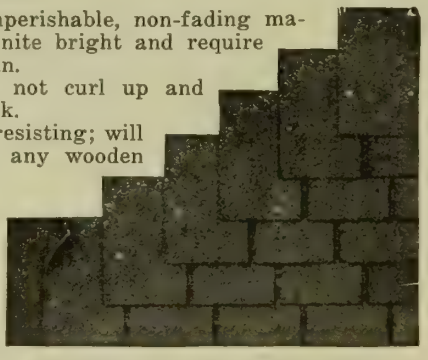
Vulcanite Asphalt Shingles

Constructed of unperishable, non-fading materials; remain indefinite bright and require neither paint nor stain.

Storm-proof. Do not curl up and blacken, warp or crack.

Fire-proof. Fire-resisting; will outwear and outlast any wooden shingle.

Individual shingles are packed in cartons. Four cartons will lay one square and weigh approximately 225 pounds. Size, 8x12¾ inches. They lay 4 inches to the weather, giving a protection of three thicknesses; four where nailed.



Vulcanite Asphalt Shingles.

Vulcanite Jumbo Shingles

Extra large and heavy; 50 per cent increased bulk gives longer life and greater weather resistance. Self spacing.



Vulcanite Jumbo Shingles.

No "laying off" needed. Unexposed portion forms a solid back which nits together and gives practically the same storm protection as solid strip shingles.

Colors, gray, green and red, natural rock colors and permanent. Packed in cartons four to the square. Weight approximately, 250 pounds.

Vulcanite Reversible Shingles

A seperate individual shingle, one end square, the other rounded, making possible a variety of attractive designs. Finish, red and green. Colors absolutely permanent. Of excellent weather-resisting quality. Packed in cartons. Weight, 200 pounds per square.

Vulcanite Roll Roofing

Fnishes: Red and gray, gree, crushed rock, ground mica, bird's-eye gravel, ground marble and silica. All manufactured, without the use of tar and straw paper under Vulcanite specifications. Roll is 32 inches wide and 40½ ft. long, containing 108 square feet.

Mica finish, 34 to 54 pounds.

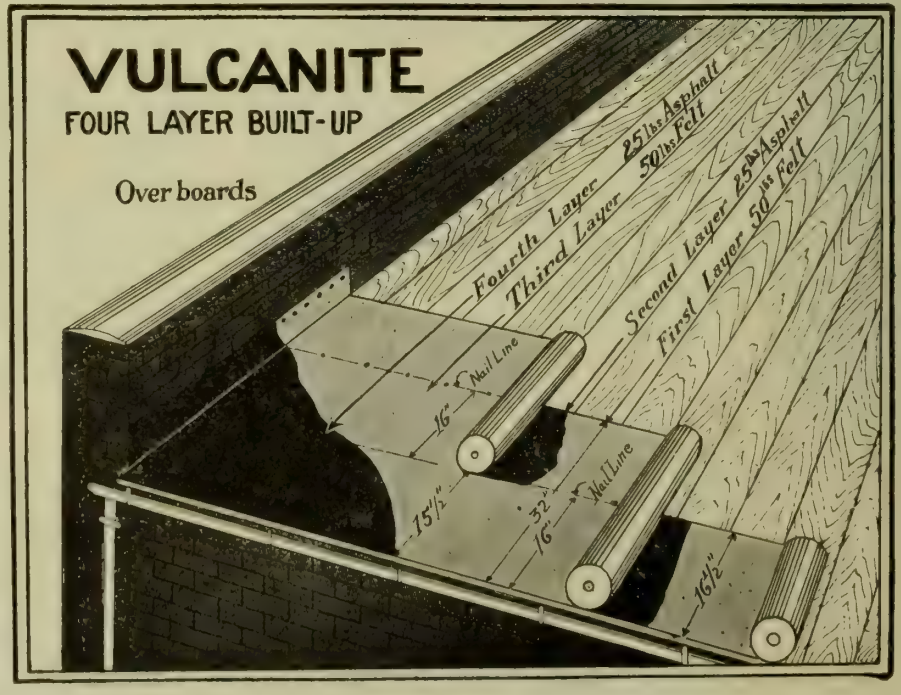
Red or green finish, 80 pounds.



Vulcanite Rubber Roofing



Vulcanite Red and Green Roofing



Vulcanite Built-Up Four-Ply Asphalt Roof. Can be applied over concrete or wood.

PITTSBURGH IRON & WIRE WORKS

TAYLOR & DEAN

General Office and Works

2418-20-22-24-26-28 Penn Ave. Cor. 25th St. Pittsburgh, Pa.

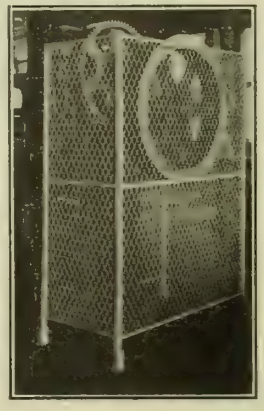
Products

Ornamental Iron and Wire Work, Fire Escapes, Fire Proof Porches, Elevator Cabs and Enclosures, Office Railing, Builders' Iron Work, Wrought Iron Fences, Iron Stairs, Iron Ladders and Stairways for Mines, Stable Fixtures, Folding Gates, Metallic Lockers, Iron Shutters, Cellar Doors, Fly Screens, Lawn Fencing, Fire Guards, Window Guards, Wire Signs, Coal and Sand Screens, Riddles and Sieves, Iron and Brass Wire Cloth of all kinds, Poultry Netting and Wire Fencing, Fire Extinguishers, Machinery and Gear Wheel Guards, and Protective Appliances.



Metal Lockers

Our Metal Lockers are substantially built, made to suit your space; in any shape or style, with full length lock bar, ventilated sheet metal and combined with wire work—compact, durable.



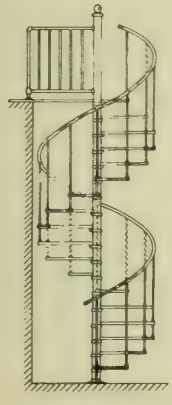
Accident Prevention Appliances

Guards of any shape for accident prevention, made to suit your gear wheels, out of wire, sheet metal, or a combination of both. Intricate machinery can be guarded.

Spiral Stairways and Iron Ladders for Mines

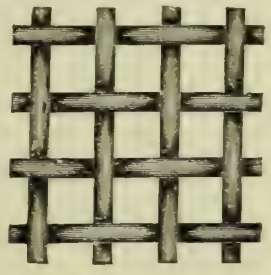
Fire-Proof Porches for Apartment Houses, Tenements, etc.

These are absolutely necessary in these days of Safety First.



Wire Cloth

All grades in iron and brass for coal screens, washers, laboratory purposes, etc. Galvanized cloth.





Fire Escapes

In accordance with the laws of the Commonwealth. We are pioneer manufacturers, and make this one of our big features. Our escapes are built to stay. Plans made and estimates cheerfully given. We will send a competent man to examine your buildings. Ask us.

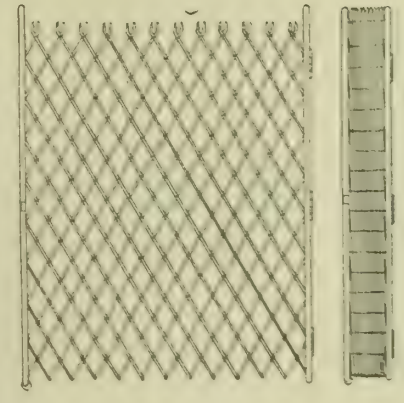
Folding or Collapsing Gates

Take up little space; swing out of the way when not in use. Made any height or weight.

Wrought Iron Fencing of every description.

Entrance Gates.

Protect your property with our substantial fences.



Area Gratings and Pipe Railings.

Write us for quotations.



COKE OVEN SECTION

Engineering Data

Coke Oven Construction.

Standardization of Shapes.

Coal Tar Tree

Coke Oven Data

Courtesy Harbison-Walker Refractories Co. and United Fire Brick Co.

There is a tendency to standardize rectangular oven construction, the many advantages to be derived from such a standardization being obvious.

The following dimensions may be regarded as definitely settled:

Batter of outside walls 2½" to the foot

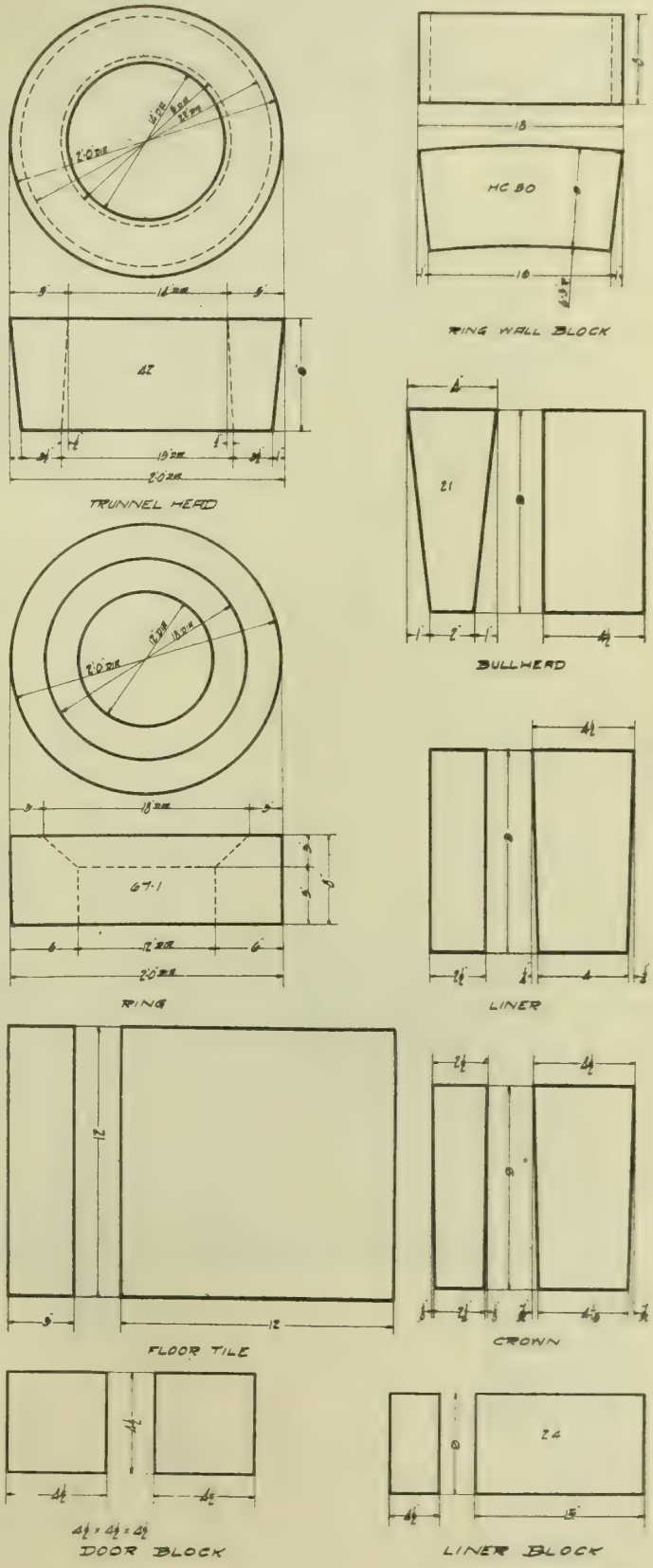
Width of door 5 feet at each end.

Ovens with doors wider at one end than the other are no longer being constructed. There is no standard for the height of the door from the bottom plate to the base of the arch, but it is possible that future ovens will be constructed by using four jambs each 9" in height, making a total height of from 36½" to 37", depending upon the size of the joints. The arch having a span of 5 feet and a rise of 18", giving a radius of 2' 10" may be regarded as definitely accepted as standard.

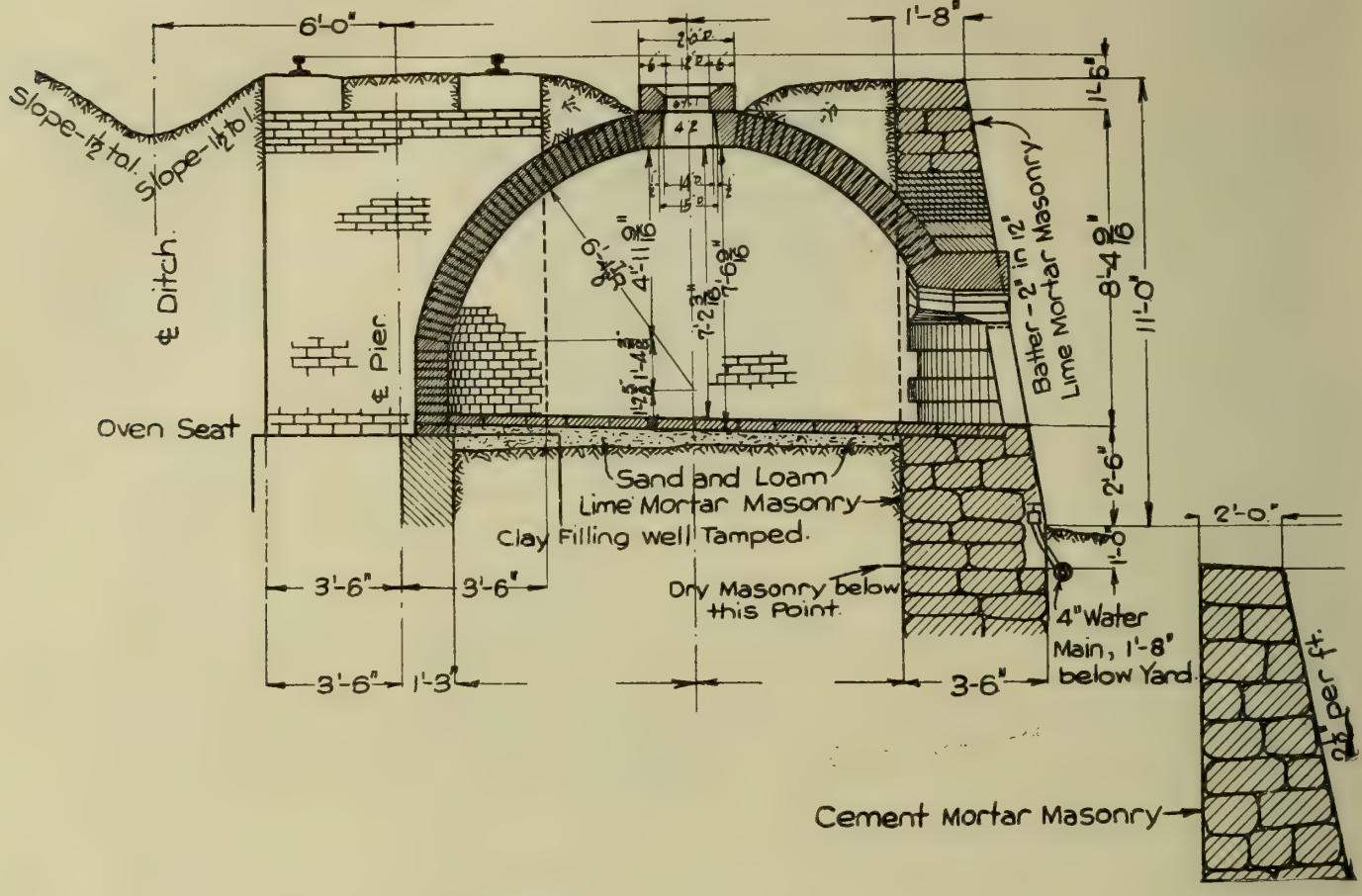
There is a tendency to standardize every fire brick and fire clay shape entering into the construction of rectangular ovens and if these tendencies are supported by those building such ovens in the future it will inevitably result in economy in construction and repairs. Every new design involves a new set of molds and when repairs are needed, instead of being shipped from stock, they have to be made up on special order. Moreover, if repairs are ordered from someone other than the manufacturer furnishing the material in the first instance, more molds would again have to be made. It is also necessary in all lines of business to charge more for material made up on special order than for standard material which can be regularly made and carried in stock.

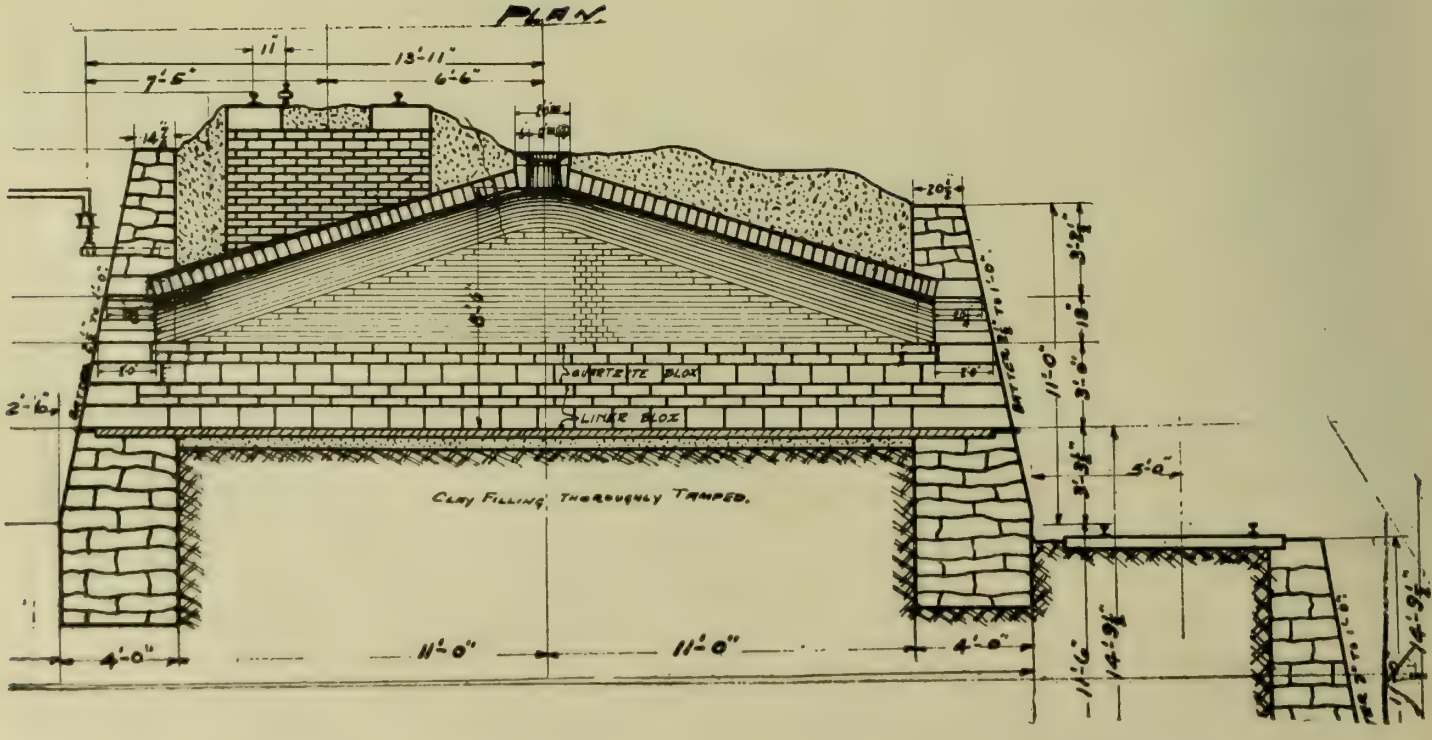
By the co-operation of all concerned it will likely be possible in the near future for every coke oven fire brick manufacturer to carry in stock material for repairs of standard rectangular coke ovens.

Standard Shapes and Dimensions of Coke Oven Materials



Diagrams Showing Coke Oven Construction





Courtesy Harbison-Walker Refractories Co.

Coal Tar Tree



GENEALOGICAL TREE.

Showing the more important Compounds existing in, and derived from Coal Tar by distillation, together with those formed by further Chemical treatment, the connecting links being maintained in continuity. Compiled by

Boverton Redwood F.C.S. F.I.C.

Courtesy C-A-Wood Preserver Co.



POWER PLANT SECTION

Engineering Data

Standard Specifications for Horizontal Return Tubular boilers.
Selection of Steam Boilers (Water Tube).
The Efficient Operation of Boilers in Mine Plants.
Model Piping Specifications.
Table—Water Required per minute to Feed Boilers.
Table—Properties of Saturated Steam.
Specification Data for Electric Motors.
Compressed Air Transmission.
Table—H. P. Required (Single Stage Compression).
Table—H. P. Required (Two-Stage Compression).
Table—H. P. Required (Three-Stage Compression).
Table—Loss of Pressure in Compressed Air Transmission.
Table—Discharge of Air Through an Orifice.
Table—Air Required to Run Drills.

The following manufacturers have catalogue descriptions in this section:

American Steam Gauge & Valve Co.
Armstrong Cork & Insulation Co.
Atlantic Refining Co.
Ball Engine Co.
Boston Belting Co.
Brownell Co.
Casey-Hedges Co.
Combustion Engineering Corp.
Coppus Engineering & Equipment Co.
Cresson-Morris Co.
Durable Mfg. Co.
Foster Engineering Co.
Gem Mfg. Co.
General Electric Co.
Goodrich, B. F., Co.
Goodyear Tire & Rubber Co.
Homesteal Valve & Mfg. Co.
Ingersoll-Rand Co.
Jenkins Bros.
Keeler, E., Co.
Keystone Lubricating Co.
Kincaid Stoker Co.
Ladd, Geo. T., Co.
McClave-Brooks Co.
Mulconroy & Co., Inc.
Neemes Bros.
Ohio Grease Co.
Parson Mfg. Co.
Peerless Rubber Mfg. Co.
Pittsburgh Filter Mfg. Co.
Pittsburgh White Metal Co.
Precision Instrument Co.
Ridgway Dynamo & Engine Co.
Sims Co.
Thermoid Rubber Co.
Thomas Grate Bar Co.
Union Iron Works.
Valley Iron Works.
Westinghouse Air Brake Co.
Westinghouse Elec. & Mfg. Co.
Wickes Boiler Co.
Williams Gauge Co.

For additional descriptions of Power Plant Equipment not appearing in this section, refer to Index of Products in front of book.

Standard Specifications

For Horizontal Return Tubular Boilers

These specifications have been adopted by the Boiler Manufacturers listed at the end of this article

The dimensions and rating of standard stationary tubular boilers, together with the sizes of the parts and usual fittings, will be found tabulated on the following pages. Boilers to conform to these specification shall be made and equipped as there indicated and as described herein. All boilers shall be of such strength that the factor of safety shall be not less than five.

MATERIALS.

The shell, heads and covering strips of the standard boiler shall be of flange steel described in the standard specifications of the Association of American Steel Manufacturers. All such plates shall be marked 60,000 pounds tensile strength and in building the boiler the plates shall be so placed that these stamps are plainly visible from the outside. These plates shall have the full specified thickness at the edges and shall meet the tensile, quenching and bend tests described.

The tubes shall be standard quality lap-welded mild steel of standard manufacture. The thickness of the metal shall be 12 B. W. G. for 3-inch tubes, 11 B. W. G. for 3 1-2-inch tubes and 10 B. W. G. for 4-inch tubes.

The rivets shall be of boiler rivet steel as described in the Standard Specifications of the Association of American Steel Manufacturers and of proper size to suit the size of the hole and the thickness of the plates and to form up heads equal in strength to the pressed heads of same.

The diagonal braces shall be weldless of the same quality as the flange steel previously described and pressed from the solid plate, or else from forged steel bars. The number of braces to be used shall be computed on an allowance of not more than 7500 pounds of load per square inch of section of brace neglecting, in this, the inherent strength of the heads and the slight angularity of the braces.

Suitable through rods and braces shall be installed below the tubes when necesssary to sustain the pressure. These shall be of steel and shall be computed with the same allowance as diagonal braces.

Braces as above described shall be carefully placed so that the pressure on the flat surface, both above and below the tubes shall be as nearly equally distributed as possible.

For any boiler head the area to be supported by braces shall be the surface included within lines drawn two inches from the outside of the tubes and three inches from the inside of the shell.

DESIGN.

The longitudial seam of the shell shall be of the butt joint type having inside and outside covering strips and either double, triple of quadruple riveted as indicated on table shown herewith. (See footnote.)

The circumferential seams shall be of the lap type of joint and single riveted.

In all joints the size, number and spacing of the rivets shall be such as to provide the strength necessary to maintain the factor of safety of five.

The tubes shall be placed in vertical and horizontal rows with ample space between the adjacent tubes and also between tubes and shell for the circulation of water and also with a large steam space above the water line.

Boilers forty-four inches or less in diameter shall have a manhole above the tubes and a handhole below the tubes. These may both be in the front head or the handhole may be in the front head and the manhole in the back head. Boilers forty-eight inches in diameter shall have two manholes, both in the heads, one above the tubes and one below the tubes. They may both be in the front head or one manhole may be in the front head below the tubes and the other in the back head above the tubes. Boilers larger than forty-eight inches shall have two manholes, one of which shall be in the front end below the tubes, the other shall be above the tubes in either head or preferably may be placed in the shell.

The opening in the manhole shall not be less than 10x15 inches. Each manhole shall be equipped with a heavy plate, bale, bolt, nut and gasket.

Manholes placed in the shell shall be properly reinforced with a suitable steel saddle.

All openings 2 inches in diameter or larger shall have suitable steel-reinforcing flanges riveted on. Cast iron flanges or nozzles shall not be used.

Boilers for 125 or 150 pounds working pressure shall have the feed opening in the front head over the tubes and same shall be provided with a brass bushing and an internal feed pipe extending from the front end of the boiler to within about three feet of the rear head, thence to the side of the shell terminating in an elbow for discharge below the top row of tubes.

Boilers for 100 pounds working pressure shall be arranged to feed through the blow-off connection and the internal feed pipe be omitted.

Each boiler shall be provided with four steel lugs or brackets, two on each side for supporting the boiler, except that boilers 78 inches in diameter or boilers 20 feet long shall be provided with eight such lugs, four on each side of the boiler and all of them arranged in pairs.

NOTE.—The butt type of joint is specified because the lap joint has been proved dangerous when used for the longitudinal seams. Defects in the lap seam usually develop where the parts are hidden. Inspection cannot reveal them. Domes are not specified because they are mechanically bad and are not necessary. The fixed, or "plug hat" type of dome is awkward at best, it tends to weaken the boiler and frequently makes the use of the lap type of joint necessary on the longitudinal seam.

The independent type of dome can be used on any boiler, but it will probably be found to be better engineering to apply it in the form of a steam separator near the engine throttle instead of as a dome near the boiler.

The manufacturers who have adopted these specifications do not recommend domes or lap joints when used on longitudinal seams.

WORKMANSHIP.

All rivet holes, and all tube holes shall be either drilled from the solid or punched small and reamed to size. After drilling or reaming the plates shall be taken apart and all burrs removed and the tube holes chamfered with a rose reamer.

The edges of the plate shall be beveled to an accurate caulking edge and after being riveted shall be caulked tight with a round nose tool.

The tubes shall be carefully placed, expanded tight in the heads with a roller expander and the ends carefully beaded over against the head at both ends.

WATER COLUMN.

The water column shall be provided with three gauge cocks and shall be so placed that the lowest gauge cock shall be two inches above the tops of the uppermost row of tubes. The middle gauge cock shall be three inches and the uppermost gauge cock six inches above the lowest gauge cock measured vertically.

TESTS.

All material used in the construction of the boiler shall be rigidly tested as called for in the above specifications and the completed boiler shall be subjected to a steady water pressure 50 per cent. aove its proposed working pressure and made tight.

When specially requested the boiler manufacturer will furnish copies of the records of tests of the plates as made by the steel manufacturers. Theses reports shall be deemed sufficient indication of the quality of steel used.

EQUIPMENT.

A complete standard boiler equipment includes.

The bare boilers with lugs.

Cast iron front with anchors.

Grate bars with bearers.

Rear arch bars.

Rear ash pit door and frame.

Safety valve with nipple to connect it to boiler.

Steam gauge with siphon.

Water column with gauge glass, three gauge cocks and pipe connections to boiler.

Blow off valve.

Check valve.

Stop valve for water feed line.

Smoke stack and guys.

(Stacks less than 60 feet long shall have four guy eyes, and guys six times as long as the stacks. Stacks 60 feet long or longer have six guy eyes, two set of three, and guys ten times as long as the stack.)

A stack plate or nozzle shall be included with each boiler.

SUPPLEMENTARY.

In answer to a call by the committee, a meeting was called at Pittsburgh on October 30th and 31st, 1913, to discuss in detail recommendations for the standardization of Tubular Boilers.

The meeting was called with the hope of being able to make recommendations that would be acceptable to all localities that now have boiler laws, and of such character that they will be considered as the best possible laws for every community and state to adopt when legislation of this character came up in the future.

As the Massachusetts laws had been in existence longer than any others, and had been found to be very good and efficient laws, they were rather taken as the basis of all the argument. The Massachusetts law mainly, is concurred in by the Ohio law, the Chicago Rules, the Detroit Rules and the Memphis Rules, and as they are the pioneers in this class of legislation from a State viewpoint, it is fair to assume that their laws will probably be the basis for the concurrent legislation throughout the United States.

It is well to bear in mind that each recommendation following was concurred in absolutely unanimously, and resolutions passed to that effect.

1. Factor of safety of five.
2. Fusible plugs in all boilers.
3. All rivet holes to be reamed. Plates up to and including 5-16" to be reamed 1-8". From 5-16 to 5-8 inclusive, 1-4". Above 5-8" drilled from the solid.
4. Tube holes to be cut from the solid, or punched 1-2" small, and reamed to size.
5. The pitch of diagonal braces to be the pitch of staybolts, plus 2" to be the allowable pitch for diagonal braces in a boiler. Pitch to be taken from center to center of rivets.
6. Through rods to be pitched the same as diagonal braces.
7. When boiler has a manhole, the front rear of rear head can be braced with crowfoot braces, and can be triangular if properly distributed, but the bridge type of brace for rear head is preferred.
8. Longitudinal seams of shell to be butt strapped in all cases except boilers under 36" in diameter, not exceeding 100 lbs. working pressure. Thickness of butt straps as recommended by Massachusetts Board of Boiler Rules.
9. Manholes and handholes: Boilers 40" in diameter shall have a manhole above the tubes. Boilers above 48" diameter, below the tubes. Boilers 48" and larger in diameter shall have two manholes, one above, and one below the tubes. All boilers that do not have a manhole shall have a handhole in the front head.
10. Perforated dry pipes to be prohibited. The slotted or channel dry pipe to take its place.
11. Boilers above 72"in diameter shall have gallows frame suspension. 72" diameter and less shall be supported by brackets.
12. Internal feed pipe as per Massachusetts laws.
13. All plates to be bevelled on a regular plate paner where possible. and no process to be used in bevelling plate that causes distortion at the edge.
14. Inspectors to be authorized to replace obliterated stamps.
15. Blow off tanks to be made of boiler plate to stand boiler pressure with two flanges for inlet and outlet. Outlet to be equivalent to twice the diameter of the blow off inlet.
16. Fitting of butt straps per Massachusetts law.
17. Minimum size of water column pipe, 1 1-2".

SPECIFICATIONS—STANDARD RETURN TUBULAR BOILERS

Longitudinal Seams, All Butt Jointed—Double Riveted. 100 Pounds Working Pressure

Horse Power of Boiler as rated	15	20	25	30	35	40	45	50	60	70	80	90	100	110	125	150	165	180	200
Diameter of Boiler...inches	36	36	36	44	44	44	48	48	54	54	60	60	66	66	72	72	72	78	78
Length of Tubes...feet	8	10	12	10	12	14	12	14	14	16	16	18	16	18	16	18	20	18	20
Number of 3-inch tubes	24	24	24	36	36	36	46	46											
Number of 3½-inch tubes				28	28	28	34	34	44	44	54	54	66	66	86	86	86	110	110
Number of 4-inch tubes						28	28	36	36	44	44	54	54	70	70	70	88	88	
Tube Heating Surface with 3-inch tubes...square feet	150.8	188 5	226 2	282 7	339 2	395 8	433 5	505 8											
Tube Heating Surface with 3½-inch tubes..square feet				256 6	307 9	359 2	373 9	436 2	564 4	645 1	791 7	890 6	967 6	1088 6	1260 8	1418 4	1576 0	1814 0	2015 9
Tube Heating Surface with 4-inch tubes...square feet							351 9	410 5	527 8	603 2	737 2	829 4	904 8	1017 9	1172 9	1319 5	1466 0	1658 8	1843 1
Shell Heating Surface...square feet	50 3	62.8	75 4	76.8	92 2	107 5	100 5	117 3	131 9	150 8	167 6	188 5	184 3	207 4	201 1	226 2	251 3	245 2	272 4
Thickness of Shell...inches	¼	¼	¼	¼	¼	¼	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Thickness of Heads...inches	¼	¼	¼	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	½	½	½	½
Width of Grates...inches	36	36	36	42	42	42	48	48	54	54	60	60	66	66	72	72	72	78	78
Length of Grates...inches	36	36	42	36	42	48	42	48	48	54	54	60	54	60	54	60	66	60	66
Area of Grates...square feet	9.0	9.0	10 5	12 25	14 0	14 0	16 0	18 0	20 25	22 5	25 0	24 75	27 5	27 0	30 0	33 0	32 5	35 75	
Diameter of Stack...inches	16	16	16	22	22	22	24	24	26	26	28	28	30	30	34	34	34	38	38
Length of Stack...feet	30	35	40	35	40	50	40	50	50	60	60	60	60	60	60	60	60	70	70
Gauge of Stack	16	16	16	16	16	16	16	16	16	16	14	14	14	14	14	14	14	12	12
Length of Guys...feet	180	210	240	210	240	300	240	300	300	600	600	600	600	600	600	600	700	600	700
Diameter of Guys...inches	⅜	⅜	⅜	½	½	½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	½	½

SIZE OF TRIMMINGS

Size of Steam Opening...inches	2½	2½	2½	2½	3	3	3	3	3½	3½	4	5	5	5	5	6	6	6	6
Size of Pop Safety Valve...inches	1¼	1¼	1½	1½	1½	2	2	2	2½	2½	2½	3	3	3	4	4	4	4	4
Size of Water Gauge Glass...inches	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Size of Water Column Connections...inches	¾	¾	¾	1	1	1	1	1	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Size of Gauge Cocks...inches	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾
Size of Blow-off...inches	1½	1½	1½	1½	1½	1½	1½	1½	2	2	2	2	2	2	2	2½	2½	2½	2½
Size of Feed and Check Valves...inches	1	1	1	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1½	1½	2	2
Size of Steam Gauge Dial...inches	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

SPECIFICATIONS—STANDARD RETURN TUBULAR BOILERS

Longitudinal Seams, All Butt Jointed—Triple Riveted. 125 Pounds Working Pressure

Horse Power of Boiler as rated	45	50	60	70	80	90	100	110	125	150	165	180	200						
Diameter of Boiler...inches	48	48	54	54	60	60	66	66	72	72	72	78	78						
Length of Tubes...feet	12	14	14	16	16	18	16	18	16	18	20	18	20						
Number of 3-inch Tubes	46	46																	
Number of 3½-inch Tubes	34	34	44	44	54	54	66	66	86	86	86	110	110						
Number of 4-inch Tubes	28	28	36	36	44	44	54	54	70	70	70	88	88						
Tube Heating Surface with 3-inch Tubes...square feet	433 5	505 8																	
Tube Heating Surface with 3½-inch Tubes.square feet	373 9	436 2	564 4	645 1	791 7	890 6	967 6	1088 6	1260 8	1418 4	1576 0	1814 0	2015 9						
Tube Heating Surface with 4-inch Tubes . square feet	351 9	410 5	527 8	603 2	737 2	829 4	904 8	1017 9	1172 9	1319 5	1466 0	1658 8	1843 1						
Shell Heating Surface...square feet	100 5	117 3	131 9	150 8	167 6	188 5	184 3	207 4	201 1	226 2	251 3	245 2	272 4						
Thickness of Shell...inches	¼	¼	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	½	½						
Thickness of Heads...inches	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	½	½	½	½						
Width of Grates...inches	48	48	54	54	60	60	66	66	72	72	72	78	78						
Length of Grates...inches	42	48	48	54	54	60	54	60	54	60	66	60	66						
Area of Grates...square feet	14 0	16.0	18 0	20 25	22 5	25 0	24 75	27 5	27 0	30.0	33 0	32 5	35 75						
Diameter of Stack...inches	24	24	26	26	28	28	30	30	34	34	34	38	38						
Length of Stack...feet	40	50	50	60	60	60	60	60	60	60	70	60	70						
Gauge of Stack	16	16	16	16	14	14	14	14	14	14	14	12	12						
Length of Guys...feet	240	300	300	600	600	600	600	600	600	600	700	600	700						
Diameter of Guys...inches	½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾						

SIZE OF TRIMMINGS

Size of Steam Opening...inches	3	3	3½	3½	4	5	5	5	5	6	6	6	6						
Size of Pop Safety Valve...inches	2	2	2½	2½	2½	3	3	3	4	4	4	4	4						
Size of Water Gauge Glass...inches	⅝	⅝	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾						
Size of Water Column Connections...inches	1	1	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼						
Size of Gauge Cocks...inches	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾						
Size of Blow-off...inches	1½	1½	2	2	2	2	2	2	2	2½	2½	2½	2½						
Size of Feed and Check Valves...inches	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1½	1½	2	2						
Size of Steam Gauge Dial...inches	5	5	5	5	5	5	5	5	5	5	5	5	5						

SPECIFICATIONS—STANDARD RETURN TUBULAR BOILERS

Longitudinal Seams all Butt Jointed—Quadruple Riveted. 150 Pounds Working Pressure

Horse Power of Boiler as rated	45	50	60	70	80	90	100	110	125	150	165	180	200						
Diameter of Boiler...inches	48	48	54	54	60	60	66	66	72	72	72	78	78						
Length of Tubes...feet	12	14	14	16	16	18	16	18	16	18	20	18	20						
Number of 3-inch Tubes	46	46																	
Number of 3½-inch Tubes	34	34	44	44	54	54	66	66	86	86	86	110	110						
Number of 4-inch Tubes	28	28	36	36	44	44	54	54	70	70	70	88	88						
Tube Heating Surface with 3-inch Tubes...square feet	433 5	505 8																	
Tube Heating Surface with 3½-inch Tubes.square feet	373 9	436 2	564 4	645 1	791 7	890 6	967 6	1088 6	1260 8	1418 4	1576 0	1814 0	2015 9						
Tube Heating Surface with 4-inch Tubes...square feet	351 9	410 5	527 8	603 2	737.2	829 4	904 8	1017 9	1172 9	1319 5	1466 0	1658 8	1843 1						
Shell Heating Surface...square feet	100 5	117 3	131 9	150.8	167 6	188 5	184 3	207 4	201.1	226 2	251 3	245 2	272 4						
Thickness of Shell...inches	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	½	½	½	½	½						
Thickness of Head...inches	⅜	⅜	⅜	⅜	½	½	½	½	½	½	½	½	½						
Width of Grates...inches	48	48	54	54	60	60	66	66	72	72	72	78	78						
Length of Grates...inches	42	48	48	54	54	60	54	60	54	60	66	60	66						
Area of Grates...square feet	14 0	16 0	18.0	20.25	22.5	25 0	24 75	27 5	27 0	30 0	33 0	32 5	35 75						
Diameter of Stack...inches	24	24	26	26	28	28	30	30	34	34	34	38	38						
Length of Stack...feet	40	50	50	60	60	60	60	60	60	60	70	60	70						
Gauge of Stack	16	16	16	16	14	14	14	14	14	14	14	12	12						
Length of Guys...feet	240	300	300	600	600	600	600	600	600	600	700	600	700						
Diameter of Guys...inches	½	½	½	½	⅝	⅝	⅝	⅝	⅝	⅝	⅝	¾	¾						

SIZE OF TRIMMINGS

Size of Steam Opening...inches	3	3	3½	3½	4	5	5	5	5	6	6	6	6						
Size of Pop Safety Valve...inches	2	2	2½	2½	2½	3	3	3	4	4	4	4	4						
Size of Water Gauge Glass...inches	⅝	⅝	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾						
Size of Water Column Connections...inches	1	1	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼						
Size of Gauge Cocks...inches	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾	¾						
Size of Blow-off...inches	1½	1½	2	2	2	2	2	2	2	2½	2½	2½	2½						
Size of Feed and Check Valves...inches	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1½	1½	1½	2	2						
Size of Steam Gauge Dial...inches	5	5	5	5	5	5	5	5	5	5	5	5	5						

The following manufacturers have adopted the specifications given on the following pages:

Bass Foundry & Machine Co. ..... Fort Wayne Ind.
John Brennan & Co. ..... Detroit, Mich.
Broderick Co. ..... Muncie, Ind.
Wm. Bros. Boiler & Manufacturing Co. Minneapolis, Minn.
The Brownell Co. ..... Dayton, Ohio
The Casey-Hedges Co. ..... Chattanooga, Tenn.
Chandler & Taylor Co. ..... Indianapolis, Ind.
R. D. Cole Manufacturing Co. ..... Newnan, Ga.
Erie City Iron Works ..... Erie, Pa.
S. Freeman & Sons Manufacturing Co. .... Racine, Wis.
Frost Manufacturing Co. ..... Galesburg, Ill.
Gem City Boiler Co. ..... Dayton, Ohio
Houston, Stanwood & Gamble Co. ..... Cincinnati, Ohio
E. Keeler Co. ..... Williamsport, Pa.
Kewanee Boiler Co. ..... Kewanee, Ill.
Lombard Iron Works & Supply Co. ..... Augusta, Ga.
Lookout Boiler & Manufacturing Co... Chattanooga, Tenn.
McIlvain & Spiegel Boiler & Tank Co. .. Cincinnati, Ohio
Milwaukee Boiler Co. ..... Milwaukee, Wis.
John H. Murphy Iron Works ..... New Orleans, La.
Murray Iron Works Co. ..... Burlington, Iowa
John O'Brien Boiler Works Co. ..... St. Louis, Mo.
Phoenix Iron Works Co. ..... Meadville, Pa.
John Rohan & Son Boiler Works Co. ..... St. Louis, Mo.
J. S. Schofield's Sons Co. ..... Macon, Ga.
Dan Shea Boiler Works ..... Memphis, Tenn.
Southern Engine & Boiler Works ..... Jackson, Tenn.
Topeka Steam Boiler Works ..... Topeka, Kas.
Tudor Boiler Manufacturing Co. ..... Cincinnati, Ohio
Union Iron Works ..... Erie, Pa.
Henry Vogt Machine Co. ..... Louisville, Ky.
Walsh & Weidner Boiler Co. ..... Chattanooga, Tenn.
C. J. Walton & Son ..... Louisville, Ky.
Joseph F. Wangler Boiler & Sheet Iron Works Co. ..... St. Louis, Mo.

The Economy of Stoker Equipment for Mine Power Plants

By JOHN VAN BRUNT, M. E.,

In many coal mining operations the boiler plant and its economical operation receives but scant consideration, because coal at the mine is cheap. If the cost of power seems high, attempts to reduce it usually end before the boiler room is reached, again because coal is cheap and because the labor for firing it is considered a necessary expense not susceptible of reduction.

Under conditions existing at the average coal mine, the problem of making steam is different than elsewhere, in that the labor cost of firing coal and removing ashes will approximate one-half the value of coal fired, when boilers are fired by hand and coal charged to power at the cost of mining.

Consider a boiler plant operating under such conditions, using run of mine for fuel and firing same by hand, and note the possible saving, both in fuel and labor. This condition is a common one and can be greatly improved in several directions—cheaper fuel—reduced labor—more efficient boiler operation and greater capacity.

The choice of cheaper fuel lies between slack and refuse. The former we will dismiss, as it is a marketable fuel of nearly the same value as run of mine.

There remains the refuse which has a fairly good heating value, considering the amount of incombustible matter in it. The heat value may be assumed at form 9,000 to 10,500 B. T. U's, with the ash content ranging between 20% and 35%. To burn fuel of this character by hand firing, is out of the question, because of the additional quantity to be handled, requiring more labor and the practical difficulties of getting the capacity out of the boilers. To utilize this waste, it must be burned in mechanical stokers of a type suited to the character of the fuel. Generally speaking, a different type of stoker and furnace is required for anthracite than for bituminous, the main features of the problem are in other respects the same.

With the proper stoker selected, the next point to determine is the size of the stoker which will be determined by the size of boiler, and the power required from it and limited by the dimensions of the boiler. Sufficient stoker capacity to operate the boilers continuously at 150 to 200% of rating should be provided. At these ratings the efficiency will be lower than if operated at rating, but the gain in capacity much more than offsets the decrease in efficiency, as fewer boilers are required.

Having determined the type and size of stoker, the next step is to select the coal and ash conveying machinery, bearing in mind that about 40% more refuse than run of mine must be handled, also that the ash will be about four times as much as ash from run of mine. If the contour of the ground permits, the fuel should reach the stoker hoppers by gravity alone, that is, dumped in bunkers above the stokers directly from cars from the refuse pile, elevators or conveyors being eliminated as far as possible, except in so far as labor may be saved.

The disposal of ashes should be considered with the same idea in view—the elimination of as much labor as possible. The selection of the best means will depend on the conditions. Whether a conveyor —ash drag—or small cars drawn by cable or electric locomotive, or horses, is the best method, can be determined by a careful analysis of the conditions and costs.

Where plenty of water is available and surrounding ground permits, ashes may be flushed out of ash pits continuously.

Obviously such an equipment will take but little labor to operate the stokers. It will require one fireman to four, five or six boilers, depending on the size, no coal passers, and one or two men to remove ashes. At no time after fuel reaches the bunkers will a shovel be used. The fireman will have to look after the water and see that the stokers are working properly, oiling stokers and forced draft fans and engines.

If a coal and ash conveyor are found necessary, they should be of ample capacity and most substantial. The power to operate them is not as important a factor as in plants where coal is costing $2.00 to $4.00 per ton.

Many mine boiler plants are so aranged that the installation of mechanical equipment would be exceedingly expensive, due to boilers of small capacity, expense of providing for ash removal, and coal conveyors. Even such are capable of changes that will greatly reduce operating costs, if indeed it is not more economical to build a new plant or large units, designed to handle and burn a low grade fuel or refuse at a minimum cost.

The apparent cost of stokers and conveying machinery for this purpose is high because of the larger sizes and capacities required ,and because of the high unit cost of stokers where boilers are of small sizes, but when it is considered that a fuel of no market value can be substituted for run of mine or slack, worth at the mine from $1.10 to 80c per ton, the apparent high cost becomes only a reasonable cost. It may be said that the saving in fuel will more than pay for the stokers—the extra capacity will cost nothing, and the saving in labor will pay for the coal and ash handling equipment.

A large number of anthracite producers have modernized their plants in this manner and are burning silt and culm, operating their boilers at 150 to 200% of rating. The same may also be said of bituminous operators. Central power plants have been built to operate several mines, the power being distributed electrically. Most of these central plants are modern in every respect, but many are burning a marketable fuel, possibly because sufficient power cannot be developed from refuse.

Chief Engineer,
Combustion Engineering Corporation,
New York.

MINING CATALOGUES

Notes on the Selection of Steam Boilers,

with Special Reference to Water-Tube Boilers.

Courtesy Babcock & Wilcox Company.

The selection of steam boilers is a matter which is worthy of the most careful thought and attention. While some purchasers of boilers give this important subject proper consideration, there are many who accept as entirely satisfactory those boilers with which they have had experience, or who buy the cheapest after little or no investigation. Purchasers of the latter class often carefully consider the comparative economy and reliability of engines and auxiliaries, so that in some steam plants we find refinements of economy and convenience in the engines and auxiliaries, while the boilers may be wasteful in operation and deficient in the essentials of simplicity, economy and adaptability to the service for which they are used. While refinements in engine economies add materially to the first cost of the plant, the best boiler may frequently be purchased at a cost comparatively little above that of an inferior one, and will effect a greater saving for a given increase in cost than could possibly be obtained by installing a more efficient engine.

The special requirements of each individual case should be carefully considered before determining the general type of the boiler needed. After the general type has been decided upon, the most important features to be considered aresafety, efficiency, durability and accessibility. Of almost equal importance are the experience, skill, financial responsibility and reputation of the manufacturers.

The method of supporting the boiler should provide for the free expansion of the component parts under changes of temperature without introducing unequal strains. The circulation should be such as to keep all parts at practically the same temperature. All parts of the boiler should be so accessible for inspection as to prohibit the possibility of concealed corrosion.

Baffles should be so designed that they cannot be easily damaged or displaced in service or by gas explosions, and should be so accessible that if a defect be discovered it may beready repaired without removing tubes or any part of the setting.

The arrangement of the tubes should be such that any tube may be removed and replaced without disturbing any other tube. The spacing should allow the free passage of the gases around each tube so as to avoid the possibility of the gases being throttled or of the spaces becoming clogged by deposits of soot. Sufficient steam and water capacity should be provided to insure dry steam under widely varying load conditions.

Riveted seams should not be placed in the path of the hottest gases. There should be no possibility of steam or air pockets at points exposed to intense heat. Tubes that may become overheated in case of low water should not be used as stays.

The life of a good boiler is variable, depending upon the attention it receives, but a modern, properly designed water-tube boiler should be capable of standing the test of a long period of years without material reduction in its margin of safety and economy.

STANDARD SPECIFICATIONS FOR POWER PIPING.

Adopted by the Power Piping Society June 24, 1915.

General Requirements

In the absence of a distinct specification by the Purchaser for material of a better grade, all material furnished shall conform to these specifications.

It is the intention that all material furnished hereunder shall be of the quality and weight which experience has shown to be safe and economical, hence the pressures specified are somewhat under those at which satisfactory service can be expected under favorable conditions, but as high as good practice will permit.

In the event of a specification by the Purchaser for service more severe for a given class of material than that given herein such material shall be furnished at the Purchaser's risk, and any guarantees for such material made hereunder become null and void.

Materials

Castings: All castings shall be smooth and free from injurious defects.

Cast Steel: The metal in steel castings shall conform to the requirements of the American Society for Testing Materials for "Medium Castings."

Semi-Steel: The metal in semi-steel castings shall have a tensile strength of not less than 30,000 pounds per square inch. A transverse test of the "Arbitration Bar," as outlined by the American Society for Testing Materials, supported 12 inches between centers shall show before breaking a load of 3,300 pounds and a deflection of not less than .12 inches.

Gray Iron: The metal in gray iron castings shall have a tensile strength of not less than 20,000 pounds per square inch. A transverse test as for Semi-Steel shall show before breaking a load of 2,900 pounds and a deflection of .10 inches.

Dimensions of Flanged Fittings

All standard and extra heavy flanged fittings shall conform to the center to face, thickness, and flange dimensions of the "American Standard," as recommended in 1914 by the A. S. M. E. Fittings used for working steam pressures 25 pounds and lower, and for water pressures 50 pounds and lower, may be lighter in the shell than the American Standard for 125 pounds working pressure.

Drilling and Facing of Flanges

All drilling of flanges shall conform to the templates of the said "American Standard," and shall straddle centers.

Standard flanges shall be plain faced. Extra heavy flanges shall have raised face extending to the inside edge of bolt holes.

Spotfacing and Backfacing

Flanges of Standard Cast Iron material shall be either spotfaced or backfaced for size 24 inch and above. Flanges of Extra heavy Cast Iron or Semi-Steel material shall be either spotfaced or backfaced for all sizes 14 inch and larger. All Cast Steel flanges shall be spotfaced or backfaced.

Type of Joints

The following sizes are the smallest for which flanged joints will be required except for unions. Below these sizes screwed connections may be used.

Superheated Steam	2 inches
Saturated steam above 125 pounds	2½ inches
Boiler Feed	2½ inches
Exhaust	2½ inches
Low Pressure Water	2½ inches
Blow-Off	2 inches
Drains	2½ inches

Stop Valves

Where Stop Valves are required they shall be gate valves except for blow-off, or where their function is that of throttling, or for sizes smaller than ¾ inches, when they shall be either globe or angle valves.

All outside screw gate valves shall be back-seated to provide for re-packing under pressure.

Materials and test pressures for the various services shall be as follows:

Superheated Steam: Gate valves 2 inches and larger shall be extra heavy, outside screw and yoke pattern, with cast steel bodies, bonnets, discs and yokes; monel metal or 23 per cent nickel steel seats and disc rings; monel metal or 23 per cent nickel steel stems; and monel metal or 23 per cent nickel steel back-seating bushing below the stuffing box. Valves 8 inches and larger shall be by-passed.

Globe and angle valves 2 inches and larger shall conform to the same general specification.

All stop valves 1½ inches and smaller shall be extra heavy and shall be made of bronze containing not less than 10 per cent of nickel.

Valves shall be tested to 800 pounds hydrostatic pressure.

Saturated Steam Between 150 Pounds and 250 Pounds Per Square Inch Inclusive: Gate valves 2½inches and larger shall be extra heavy, outside screw and yoke pattern, with semi-steel bodies, bonnets, discs and yokes; bronze seats and disc

rings; and bronze stems. Gate valves 8 inches and larger shall be by-passed.

Globe and angle valves 2½ inches and larger shall conform to the same general specification.

All stop valves 2 inches and smaller shall be extra heavy bronze.

Valves shall be tested to 800 pounds hydrostatic pressure.

Saturated Steam Between 125 Pounds and 149 Pounds Per Square Inch Inclusive: Gate valves 2½ inches and larger shall be medium, outside screw and yoke pattern, tested to 500 pounds hydrostatic pressure, with gray iron bodies, bonnets, discs and yokes; bronze seats and disc rings; and bronze stems.

Gate valves 10 inches and larger shall be by-passed.

Globe and angle valves 2½ inches and larger shall be extra heavy pattern, tested to 800 pound hydrostatic pressure, but other wise to the same general specification.

All stop valves 2 inches and smaller shall be extra heavy bronze, tested to 500 pounds hydrostatic pressure.

Boiler Feed Between 125 Pounds and 250 Pounds Per Square Inch Inclusive: Gate valves 2½ inches and larger shall be extra heavy, outside screw and yoke pattern, with semi-steel bodies, bonnets, discs and yokes; bronze seats and disc rings and bronze stems.

Globe and angle valves 2½ inches and larger shall conform to the same general specification.

Check valves 2½ inches and larger shall be extra heavy pattern, with bronze seats and disc rings.

All stop valves and check valves 2 inches and smaller shall be extra heavy bronze.

Valves shall be tested to 800 pounds hydrostratic pressure.

Exhaust: Gate valves 14 inches and larger shall be outside screw and yoke, low pressure pattern, suitable for 25 pounds working steam pressure, with gray iron bodies, bonnets, discs and yokes; bronze seats and disc rings; and rolled steel stems. Where space does not permit using outside screw and yoke, inside screw patterns may be used.

Gate valves 2½ inches to 12 inches inclusive, shall be standard pattern, outside screw and yoke, suitable for 125 pounds working pressure, with gray iron bodies, bonnets, discs and yokes; bronze seats and disc rings; and rolled steel stems.

Gate valves 2 inches and smaller shall be standard brass.

Suction and Low Pressure Water: Gate valves shall conform to the same specification as for **"Exhaust"** except that in every case bronze stems shall be used.

Check valves shall be standard pattern swing checks with bronze seats and disc rings.

Blow-Off: Blow-off connections shall be double valved.

Drains Between 125 Pounds and 250 Pounds Per Square Inch: Valves shall conform to the specification for those for "Saturated Steam between 150 and 250 pounds per square inch inclusive."

Low Pressure Drains: Valves shall conform to the specifications for those for **"Exhaust."**

Non-Return Valves: Non-return valves, either globe or angle type, shall be provided in each boiler connection. They shall work quietly, and shall automatically prevent the flow of steam from the lines to the boilers and shall be provided with means for closing by hand.

For Superheated Steam they shall be extra heavy, cast steel completely monel mounted, with monel metal pistons and dash pots if same are internal, and monel metal stems.

For Saturated Steam up to 250 pounds per square inch they shall be semi-steel, completely bronze mounted, with bronze pistons and dash pots and bronze stems.

Non-return valves shall be installed preferably with stems in a vertical position.

Fittings

Superheated Steam: Fittings 2 inches and larger shall be extra heavy, cast steel. Fittings 1½ inches and smaller shall be forged or cast steel.

Saturated Steam, Boiler Feed and Drains Between 125 Pounds and 250 Pounds Per Square Inch, Inclusive: Fittings 2½ inches and larger shall be extra heavy, semi-steel. Elbows for boiler feed shall be long radius where possible. Fittings 2 inches and smaller shall be extra heavy, gray iron.

Exhaust, Suction, Low Pressure Water and Low Pressure Drains: Fittings 14 inches and larger shall be low pressure, gray iron, suitable for 25 pounds working steam pressure. Fittings 12 inches and smaller shall be standard cast iron.

Flanged elbows for water shall be long radius where possible.

Blow-Off: Fittings shall be extra heavy semi-steel. Long radius fittings shall be used where possible.

Pipe, Flanges and Unions

Van Stone flanges shall fit the pipe closely. The lap shall be finished off to the inside edge of the bolt holes and faced with a fine tool finish.

Screw flanges shall be made up by machine where possible and all extra heavy flanges made up in the shop shall be refaced.

Steel flanges shall correspond in thickness to the American Standard for Fittings.

Superheated Steam: Flanges 6 inches and larger shall be high hub steel, Van Stoned. Flanges 5 inches and smaller shall be steel, screwed.

Saturated Steam Between 150 Pounds and 250 Pounds Inclusive: Flanges 6 inches and larger shall be low hub steel, Van Stoned.

Flanges 5 inches and smaller shall be extra heavy semi-steel screwed.

Saturated Steam Between 125 Pounds and 149 Pounds Per Square Inch Inclusive: Flanges 14

inches and larger shall be extra heavy high hub semi-steel Van Stoned.

Flanges 12 inches and smaller shall be extra heavy semi-steel screwed.

Boiler Feed and Drain Piping Between 125 Pounds ant 250 Pounds Per Square Inch Inclusive: Flanges shall be extra heavy semi-steel screwed.

Exhaust, Suction, Low Pressure Water and Low Pressure Drains: Flanges 14 inches and larger shall be standard cast iron pattern, Van Stoned.

Flanges 12 inches and smaller shall be stand cast iron, screwed.

Blow-Off: Flanges shall be extra heavy semi-steel, screwed.

Unions: On all screwed work a sufficient number of unions shall be used to facilitate repairs. One union shall be used near each screwed valve. Unions 1½ inches and larger shall be flanged and below 1½ inches they shall be gasketless, with non-corrosive seats.

Wrought Pipe

Wrought pipe shall be steel. Standard pipe shall be buttwelded for sizes 3 inches and smaller and lapwelded for sizes 3½ inches and larger. Extra strong pipe shall be buttwelded for sizes 2 inches and smaller and lapwelded for sizes 2½ inches and larger.

Steam Between 150 Pounds and 250 Pounds Per Square Inch Inclusive: Pipe shall be full weight 7 inches and smaller. Sizes larger than 7 inch shall be of the following thickness or weights per foot; 8 inch, 28.55 pounds; 9 inch, 33.90 pounds; 10 inch, 40.48 pounds; 12 inch, 49.56 pounds; 14 to 20 inch, inclusive, ⅜ inches; 22 to 24 inch inclusive, 7/16 inches.

Steam Between 125 Pounds and 149 Pounds Per Square Inch Inclusive; Suction and Low Pressure Water: Pipe shall be full weight 7 inches and smaller. Sizes larger than 7 inch shall be of the following thickness or weights per foot: 8 inch, 24.69; 9 inch, 33.90 pounds; 10 inch, 34.24 pounds; 12 inch, 43.77 pounds; 14 to 20 inch inclusive, 5/16 inches; 22 inch to 24 inch inclusive, ⅜ inches.

Boiler Feed: Pipe for pressure between 150 and 250 pounds per square inch inclusive shall be extra strong and between 125 pounds and 149 pounds per square inch inclusive, shall conform to the specification for "Steam" for the same pressures.

Exhaust Piping: Pipe 7 inches and smaller shall be full weight; 8 inch to 12 inch inclusive, shall be the same as for "Steam" between 125 pounds and 149 pounds inclusive; between 14 inches and 18 inches inclusive it shall be ¼ inch; and between 20 inches and 24 inches inclusive it shall be of the lightest card weight.

Blow-Off: Pipe shall be extra strong.

Drains: Pipe shall conform to the specification for Steam Piping for the same pressure and service.

Welding: Where it is advisable economically, branches shall be welded to main piping, in preference to the use of fittings. All welds so made shall receive a hammer test under hydrostatic pressure three times the working pressure. The fillets shall be built up to a radius equal to not less than three times the thickness of the pipe wall.

Bends: Bends shall be used for changes of alignment in preference to fittings. They shall be substantially round in section and free from injurious buckles. Radii equal to 6 diameters of the pipe shall be used where possible.

Cast Iron Pipe

Where used for exhaust, suction, and low pressure water, Cast Iron pipe shall correspond in thickness to "Class A" pipe as specified by the American Water Works Association.

Bolts

All flange bolts 1½ inches in diameter and smaller shall have square heads and U. S. Standard hexagonal cold punched chamfered and trimmed nuts. For bolts larger than 1½ inches studs with two nuts may be used. When pulled up the bolt thread shall extend completely through the nut.

Gaskets

Gaskets shall fit inside of bolt holes for all lines not under vacuum. Vacuum lines shall have full faced gaskets.

Sheet Gaskets up to and including 12 inch size shall be 1/16 inch thick and for 14 inch and larger they shall be 3/32 inches thick.

Superheated Steam: Gaskets shall be inch Tauril, Durablo, Vanda, Hodgart, or Corrugated Steel coated with Smooth-On-Cement.

Saturated Steam; Boiler-Feed, Blow-Off and Drains: Gasket shall be Rainbow or equivalent, or corrugated copper.

Exhaust: Gaskets shall be Rainbow or equivalent.

Suction and Low Pressure Water: Gaskets shall be cloth inserted rubber.

Supports

A sufficient number of supports, preferably hangers, shall be provided and so placed that their working stresses shall have a factor of safety of not less than six, assuming that each hanger is bearing its proportion of the load with the line full of water.

Sufficient anchorage shall be provided where necessary.

If roller supports are used they shall have screw adjustment.

Piping Not Shown

Piping and appurtenances such as drains, traps, priming pipes, gage and oil piping, etc., called for but not shown on drawings shall be furnished up to a value of $..... for material only at prevailing market prices. Any lines ordered in excess of this amount shall be considered as extra work and shall be furnished at prices to be agreed upon between the Purchaser and the Company.

Quantity of Feed Water Required to Supply Boiler.

Horse-Power of Boiler.	Quantity of Feed Water Required. Gallons per Minute	Pounds per Hour.	Temperature of Feed Water. Degrees Fahr.
50	3.60 to 4.20	1599 to 2029	100 to 212
100	6.57 to 7.63	3285 to 3815	100 to 212
200	13.14 to 15.26	6590 to 7630	100 to 212
250	16.43 to 19.07	8215 to 9535	100 to 212
300	19.71 to 22.89	9855 to 11445	100 to 212
400	26.28 to 30.52	13140 to 15260	100 to 212
500	32.85 to 38.15	16425 to 19075	100 to 212
600	39.42 to 45.78	19710 to 22890	100 to 212
800	52.26 to 61.04	26580 to 30520	100 to 212
1000	65.70 to 76.30	32850 to 38150	100 to 212
1200	78.84 to 91.56	39420 to 45780	100 to 212
1500	98.55 to 114.45	49275 to 57225	100 to 212
1800	118.26 to 137.34	59130 to 68670	100 to 212
2200	144.50 to 167.80	71290 to 83930	100 to 212
3000	197.10 to 228.90	98500 to 114500	100 to 212
3500	229.95 to 267.05	114975 to 133525	100 to 212
4500	295.65 to 343.35	147825 to 171675	100 to 212
6000	394.20 to 457.80	197100 to 228900	100 to 212
7000	459.90 to 534.10	229950 to 267050	100 to 212

Properties of Saturated Steam

(Peabody)

Pressure by Gauge, Lbs. per Sq. In.	Temperature of Steam, Degrees, Fahr.	Total Heat of Steam in B. T. U. above Water at 32° Fahr.	Weight of Steam, Pounds per Cubic Foot	Relative Volume, Water at 39° F. = 1
0.	212.0	1146.6	.0379	1646.0
5.3	227.9	1151.5	.0507	1231.0
15.3	250.2	1158.3	.0742	841.3
25.3	267.1	1163.4	.0972	642.0
35.3	280.9	1167.6	.1198	520.5
45.3	292.5	1171.2	.1422	438.5
55.3	302.7	1174.3	.1643	379.3
65.3	311.8	1177.0	.1862	334.5
75.3	320.0	1179.6	.2080	299.4
85.3	327.6	1181.8	.2296	271.1
100.3	337.8	1185.0	.2617	237.6
105.3	341.0	1185.9	.2724	228.3
110.3	344.1	1186.9	.2830	219.6
115.3	347.1	1187.8	.2936	211.6
120.3	350.0	1188.7	.3042	204.2
125.3	352.8	1189.5	.3147	197.3
130.3	355.5	1190.4	.3253	190.9
135.3	358.2	1191.2	.3358	184.9
140.3	360.7	1192.0	.3463	179.2
145.3	363.3	1192.7	.3567	173.9
150.3	365.7	1193.5	.3671	169.0
155.3	368.2	1194.2	.3775	164.3
160.3	370.5	1194.9	.3879	159.8
165.3	372.8	1195.7	.3983	155.6
170.3	375.1	1196.3	.4087	151.6
175.3	377.3	1197.0	.4191	147.8
180.3	379.5	1197.7	.4296	144.2
185.3	381.6	1198.3	.4400	140.8
190.3	383.7	1199.0	.4503	137.5
195.3	385.7	1199.6	.4605	134.5
200.3	387.7	1200.2	.4707	131.5

Table Showing Cost of Evaporating 1000 Pounds of Water, with Different Grades of Fuel and Varying Evaporations.

Actual Evaporation per Pound Fuel	PRICE OF COAL PER TON									
	$0.75	$1.00	$1.25	$1.50	$1.75	$2.00	$2.50	$3.00	$3.50	$4.00
	COST OF EVAPORATING 1,000 POUNDS OF WATER									
5. lbs.	.0750	.1000	.1250	.1500	.1750	.2000	.2500	.3000	.3500	.4000
5.5 "	.0681	.0909	.1136	.1363	.1591	.1818	.2272	.2727	.3182	.3636
6. "	.0625	.0832	.1041	.1250	.1458	.1666	.2082	.2500	.2916	.3333
6.5 "	.0577	.0769	.0961	.1154	.1349	.1538	.1923	.2307	.2692	.3077
7. "	.0535	.0714	.0892	.1071	.1250	.1428	.1785	.2143	.2500	.2857
7.5 "	.0500	.0666	.0833	.1000	.1166	.1333	.1666	.2000	.2333	.2666
8. "	.0469	.0625	.0781	.0937	.1093	.1250	.1562	.1875	.2187	.2500
8.5 "	.0441	.0588	.0735	.0882	.1029	.1176	.1470	.1764	.2059	.2353
9. "	.0416	.0555	.0694	.0833	.0972	1111	.1389	.1666	.1944	.2222
9.5 "	.0394	.0526	.0657	.0789	.0921	1052	.1316	.1578	.1842	.2105
10. "	.0375	.0500	.0625	.0750	.0875	.1000	.2250	.1500	.1750	.2000
10.5 "	.0357	.0476	.0595	.0714	.0833	.0952	.1190	.1428	.1666	.1994
11. "	.0340	.0454	.0568	.0681	.0795	.0909	.1136	.1363	.1590	.1818

Compressed Air Transmission

In theory there are two ideal methods of compressing and utilizing air, adiabatically or isothermally.

Adiabatic compression and utilization means that the air is compressed and expanded without transmission of heat to or from the gas.

Isothermal compression and utilization means that the air is compressed and expanded with the addition or rejection of sufficient heat to maintain the air at a constant temperature.

Single Stage Compression

The table shows the horse power required under the conditions named to compress one cubic foot of free air per minute to different gauge pressures by single stage compression.

In columns five and eight of the table below are shown the theoretical horsepowers required for isothermal and adiabatic compression. The results of isothermal compression are wholly unattainable in practice, and are placed here only for purposes of comparison. They represent an ideal which it is desirable always to keep in view. The figures given in the column of adiabatic compression are based on the assumptions that there is no radiation of heat from the air cylinder, and that the temperature of the air after delivery had become normal its volume being therefore reduced to that which is practically available for use. No allowances are included in these figures to cover losses other than that due to the heating of the air compression. But the full amount of loss represented by adiabatic compression can never be suffered in the operation of compressors, however imperfect their design. The actual compression line must always be lower than the adiabatic line, because of the radiation of heat through the cylinder walls. In ordinary, single-stage compressors, properly water-jacketed and run at a reasonable piston speed, the compression line falls considerably below the adiabatic line. Whatever diminution of loss is effected by cooling of the air in the cylinder may therefore be credited against the other unavoidable losses, partially offsetting them, viz: fractional or mechanical loss in the compressor, friction of inlet valves, heating of the intake air by contact with the hot metal surfaces, and piston clearance of the cylinder. These losses are variable in amount depending on the design of the compressor.

In the absence of indicator cards giving the actual results in individual cases, estimates based on practice may be made of the net power loss experienced in operating compressors, which will be convenient for reference. With this understanding, an attempt is made in column nine of the table to show the actual horse power required to compress one cubic foot of free air, under the condition stated at top of the column. Fifteen per cent, is assumed as a fair estimate in case of well designed and operated single stage compressors, of the additional power required, over and above that for theoretical adiabatic compression; this fifteen per cent. being taken as: the loss in purely adiabatic compression minus the effect of ordinary water-jacket cooling, plus the other three losses mentioned at end of preceeding paragraph.

The figures in columns five, eight and nine (which are for free air), if multiplied by the corresponding ratios of compression (Column 3), will give the respective theoretical and actual power costs of furnishing one cubic foot of compressed air, at the gauge pressure stated.

HORSE-POWER REQUIRED

FOR COMPRESSING ONE CUBIC FOOT OF FREE AIR PER MINUTE (ISOTHERMALLY AND ADIABATICALLY) FROM ATMOSPHERIC PRESSURE (14.7 POUNDS) TO VARIOUS GAUGE PRESSURES

Single-Stage Compression
Initial Temperature of Air Taken as 60° F.—Jacket-Cooling Not Considered

Gauge Pressure Pounds	Absolute Pressure Pounds	Number of Atmospheres	Isothermal Compression		Adiabatic Compression			
			Mean Effective Pressure	H. P.	Mean Effective Pressure Theoretical	Mean Eff. Pressure plus 15% Friction	H. P. Theoretical	H. P. plus 15% Friction
5	19.7	1.34	4.13	0.018	4.46	5.12	0.019	0.022
10	24.7	1.68	7.57	0.033	8.21	9.44	0.036	0.041
15	29.7	2.02	11.02	0.048	11.46	13.17	0.050	0.057
20	34.7	2.36	12.62	0.055	14.30	16.44	0.062	0.071
25	39.7	2.70	14.68	0.064	16.94	19.47	0.074	0.085
30	44.7	3.04	16.30	0.071	19.32	22.21	0.084	0.096
35	49.7	3.38	17.90	0.078	21.50	24.72	0.094	0.108
40	54.7	3.72	19.28	0.084	23.53	27.05	0.103	0.118
45	59.7	4.06	20.65	0.090	25.40	29.21	0.111	0.127
50	64.7	4.40	21.80	0.095	27.23	31.31	0.119	0.136
55	69.7	4.74	22.95	0.100	28.90	33.23	0.126	0.145
60	74.7	5.08	23.90	0.104	30.53	35.10	0.133	0.153
65	79.7	5.42	24.80	0.108	32.10	36.91	0.140	0.161
70	84.7	5.76	25.70	0.112	33.57	38.59	0.146	0.168
75	89.7	6.10	26.62	0.116	35.00	40.25	0.153	0.175
80	94.7	6.44	27.52	0.120	36.36	41.80	0.159	0.182
85	99.7	6.78	28.21	0.123	37.63	43.27	0.164	0.189
90	104.7	7.12	28.93	0.126	38.89	44.71	0.169	0.195
95	109.7	7.46	29.60	0.129	40.11	46.12	0.175	0.201
100	114.7	7.80	30.30	0.132	41.28	47.46	0.180	0.207
110	124.7	8.48	31.42	0.137	43.56	50.09	0.190	0.218
120	134.7	9.16	32.60	0.142	45.69	52.53	0.199	0.229
130	144.7	9.84	33.75	0.147	47.72	54.87	0.208	0.239
140	154.7	10.52	34.67	0.151	49.64	57.08	0.216	0.249
150	164.7	11.20	35.59	0.155	51.47	59.18	0.224	0.258
160	174.7	11.88	36.30	0.158	53.70	61.80	0.234	0.269
170	184.7	12.56	37.20	0.162	55.60	64.00	0.242	0.278
180	194.7	13.24	38.10	0.166	57.20	65.80	0.249	0.286
190	204.7	13.92	38.80	0.169	58.80	67.70	0.256	0.294
200	214.7	14.60	39.50	0.172	60.40	69.50	0.263	0.303

Courtesy Ingersoll-Rand Co.

Two and Three Stage Compression

The horse power for two and three stage compression at sea-level, both theoretical and actual, are given in the following tables, the figures in the col-umn headed "Horse power 15% friction," being taken as an approximation to the results obtainable in practice from stage compressors of the usual designs.

Horse-Power Required

For compressing one cubic foot of free air per minute (isothermally and adiabatically) from atmospheric pressure (14.7 pounds) to various gauge pressures.

Two-Stage Compression

Initial Temperature of Air Taken as 60 degrees F.—Jackson-Cooling Not Considered.

Gauge Pressure Pounds	Absolute Pressure Pounds	No of Atmospheres	Correct Ratio of Cylinder Volumes	Intercooler Gauge Pressure	Isothermal Compression		Adiabatic Compression				Percentage of Saving over One-stage Comp
					Mean Eff. Pressure	H. P.	Mean Eff. Pressure Theoretical	Mean Eff Pressure plus 15% Friction	H. P. Theoretical	H. P. plus 15% Friction	
50	64.7	4.40	2 10	16.2	21.80	0.095	24.30	27.90	0.106	0.123	10.9
60	74.7	5.08	2.25	18.4	23.90	0.104	27.20	31.30	0.118	0.136	11 3
70	84.7	5.76	2.40	20.6	25.70	0.112	29.31	33.71	0.128	0.147	12.3
80	94.7	6.44	2.54	22.7	27.52	0.120	31.44	36.15	0.137	0.158	13.8
90	104.7	7.12	2.67	24.5	28.93	0.126	33.37	38.36	0.145	0.167	14.2
100	114.7	7.80	2.79	26.3	30.30	0.132	35.20	40.48	0.153	0.176	15.0
110	124.7	8.48	2.91	28.1	31.42	0.137	36.82	42.34	0.161	0.185	15.2
120	134.7	9.16	3.03	29.8	32.60	0.142	38.44	44.20	0.168	0.193	15.6
130	144.7	9.84	3.14	31.5	33.75	0.147	39.86	45.83	0.174	0.200	16.3
140	154.7	10.52	3.24	32.9	34.67	0.151	41.28	47.47	0.180	0 207	16.7
150	164.7	11.20	3.35	34.5	35.59	0.155	42.60	48.99	0.186	0.214	16.9
160	174.7	11.88	3.45	36.1	36.30	0.158	43.82	50.39	0.191	0.219	18.4
170	184.7	12.56	3.54	37.3	37.20	0.162	44.93	51.66	0.196	0.225	19.0
180	194.7	13.24	3.64	38.8	38.10	0.166	46.05	52.95	0.201	0.231	19.3
190	204.7	13.92	3.73	40 1	38.80	0.169	47.16	54.22	0.206	0.236	19.5
200	214.7	14.60	3.82	41.4	39.50	0.172	48.18	55.39	0 210	0.241	20.1
210	224 7	15.28	3.91	42.8	40.10	0 174	49.35	56.70	0 216	0 247	
220	234.7	15.96	3.99	44.0	40.70	0 177	50.30	57.70	0.220	0 252	
230	244.7	16.64	4.08	45.3	41.30	0.180	51.30	59.10	0.224	0.257	
240	254.7	17.32	4.17	46.6	41.90	0.183	52.25	60.10	0.228	0.262	
250	264.7	18.00	4.24	47.6	42.70	0.186	52.84	60.76	0.230	0.264	
260	274.7	18.68	4.32	48.8	43.00	0.188	53.85	62.05	0 235	0.270	
270	284.7	19.36	4.40	50.0	43.50	0.190	54.60	62.90	0.238	0.274	
280	294.7	20.04	4.48	51.1	44.00	0.192	55.50	63.85	0.242	0.278	
290	304.7	20.72	4.55	52.2	44.50	0.194	56.20	64.75	0.246	0.282	
300	314.7	21.40	4.63	53.4	45.30	0.197	56.70	65.20	0.247	0 283	
350	364.7	24.80	4.98	58.5	47.30	0.206	60.15	69.16	0.262	0.301	
400	414.7	28.20	5.31	63.3	49.20	0.214	63.19	72.65	0.276	0.317	
450	464.7	31.60	5.61	67.8	51.20	0.223	65.93	75.81	0.287	0.329	
500	514.7	35.01	5.91	72.1	52.70	0.229	68.46	78.72	0.298	0.342	

Horse-Power Required

For compressing one cubic foot of free air per minute (isothermally and adiabatically) from atmospheric pressure (14.7 pounds) to various gauge pressures.

Three-Stage Compression

Initial Temperature of Air Taken as 60 degrees F.—Jacket-Cooling Not Considered.

Gauge Pressure Pounds	Absolute Pressure Pounds	No. of Atmospheres	Correct Ratio of Cylinder Volumes	Intercooler Gauge Pressures		Isothermal Compression		Adiabatic Compression				Percentage Saving over 2-Stage Comp.
				First Stage	Second Stage	Mean Eff. Pressure	H. P	Mean Eff. Pressure Theoretical	Mean Effective Pressure plus 15% Friction	H P Theoretical	H. P. plus 15% Friction	
100	114.7	7.8	1.98	14.4	42.9	30.30	0.132	33.30	38.30	0.145	0.167	5.23
150	164.7	11.2	2.24	18.2	59.0	35.59	0.155	40.30	46.50	0.175	0.202	5.92
200	214.7	14.6	2.44	21.2	73.0	39.50	0.172	45.20	52.00	0.196	0.226	6.67
250	264.7	18.0	2.62	23.8	86.1	42.70	0.186	49.20	56.60	0.214	0.246	6 96
300	314.7	21.4	2.78	26.1	98 7	45.30	0.197	52.70	60.70	0.229	0 264	7.28
350	364.7	24.8	2.92	28.2	110.5	47.30	0.206	55.45	63 80	0.242	0.277	7.64
400	414.7	28.2	3.04	30.0	121.0	49.20	0.214	58.25	66.90	0 253	0.292	8.33
450	464.7	31.6	3.16	31.8	132.3	51.20	0.223	60.40	69 40	0 263	0.302	8.36
500	514.7	35.0	3.27	33.4	142.4	52.70	0.229	62.30	71.70	0.273	0 314	8.38
550	564.7	38.4	3.38	35.0	153.1	53.75	0.234	65.00	74.75	0.283	0.326	8.80
600	614.7	41.8	3.47	36.3	162.3	54.85	0.239	66.85	76.90	0.291	0 334	8 86
650	664.7	45.2	3.56	37.6	171.5	56.00	0.244	67.90	78.15	0.296	0 340	9.02
700	714.7	48.6	3.65	38.9	180.8	57 15	0.249	69.40	79.85	0.303	0 348	9.18
750	764 7	52 0	3.73	40.1	189.8	58.10	0.253	70.75	81.40	0.309	0 355	
800	814.7	55 4	3.82	41.4	199.5	59.00	0.257	72.45	83.25	0 315	0.362	
850	864 7	58.8	3.89	42.5	207.8	60 20	0.262	73.75	84.90	0.321	0.369	
900	914 7	62.2	3.95	43.4	214 6	60 80	0.265	74.80	86.00	0 326	0.375	
950	964 7	65 6	4.03	44.6	224.5	61.72	0.269	76.10	87.50	0 331	0 381	
1000	1014.7	69.0	4.11	45.7	233.3	62 40	0.272	77.20	88.80	0 336	0 383	
1050	1064.7	72.4	4:15	46.3	238 3	63 10	0.275	78.10	90.10	0.340	0 391	
1100	1114.7	75 8	4.23	47.5	248.3	63 80	0.278	79.10	91.10	0 344	0 396	
1150	1164.7	79.2	4.30	48.5	256 8	64 40	0.281	80.15	92.20	0 349	0 401	
1200	1214 7	82.6	4.33	49.0	261.3	65 00	0.283	81 00	93.15	0 353	0 405	
1250	1264 7	86.0	4.42	50.3	272 3	65 60	0.286	82.00	94 30	0 357	0 411	
1300	1314 7	89.4	4.48	51 3	280 8	66 30	0.289	82.90	95 30	0 362	0 416	
1350	1364.7	92.8	4.53	52 0	287.3	66 70	0.291	84.00	96.60	0 366	0 421	
1400	1414.7	96.2	4.58	52.6	293 5	67 00	0 292	84 60	97.30	0 368	0 423	
1450	1464 7	99 6	4.64	53 5	301.5	67.70	0 295	85.30	98 20	0 371	0 426	
1500	1514.7	103.0	4.69	54 3	309 3	68 30	0 298	85 80	98 80	0 374	0 430	
1550	1564 7	106.4	4.74	55 0	317.3	68.80	0 300	86 80	99 85	0 378	0 434	
1600	1614.7	109.8	4.79	55 8	323 3	69.10	0.302	87.60	100.80	0 382	0 438	

Courtesy Ingersoll-Rand Co

Loss of Pressure in Compressed Air Transmission

The following tables give the drop in pressure per 1,000 feet of pipe, for different deliveries, and pipe sizes from 1 to 16 inch.

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Delivery in Cu. Ft. of Compressed Air per Min.	Equiv. Delivery in Cu. Ft. of Free Air per Min.	Size of Pipe, Inches: 1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	16
		Loss of Pressure, in Pounds, by Friction in 1000 Feet Lengths of Pipe																	
At 60 Pounds Gauge																			
9.84	50	18 24	5 06	1 95	.42	.13	.05												
14 73	75		11 34	4 33	.95	.29	.11	.05											
19 64	100		20.16	7 79	1.69	.52	.19	.08	.04										
24 60	125			12 23	2.65	.81	.30	13	.07	.03									
29 45	150			17 53	3.80	1.16	.44	.19	.09	.05	.03								
34 44	175				5 17	1.58	.59	.26	.13	.07	.04	.01							
39 35	200				6 77	2 09	.78	.36	.17	.09	.06	.02	.01						
49 20	250				10.61	3.24	1.22	.55	.27	.15	.08	.03	.01						
58 90	300				15.20	4.65	1.78	.78	.38	.21	.12	.05	.02	.01					
68 6	350					6 31	2.37	1 07	.53	.29	.17	.06	.03	.01					
78 6	400					8 28	3.11	1 40	.69	.39	.22	.08	.04	.01					
88 4	450					10 47	3 94	1 77	.88	.48	.28	.11	.05	.02	.01				
98 4	500						4 88	2.20	1.08	.60	.34	.14	.06	.03	.01				
118 1	600						7 03	3.17	1.56	.87	.49	19	.09	.04	.02	.01			
137.5	700						9.52	4.29	2.12	1.17	.67	.27	.12	.06	.03	.02			
156 6	800							5 57	2.75	1.52	.87	.34	.15	.08	.04	.03	.01		
176 5	900							7 08	3.49	1.94	1.17	.43	.19	.09	.05	.03	.01		
196 4	1000							8.77	4.33	2.40	1.37	.54	.24	.12	.06	.04	.02	.01	
294 5	1500								9.73	5.39	3.08	1.20	.55	.27	.15	.09	.03	.01	
393.7	2000									9.65	5.51	2.16	.98	.41	.27	.16	.06	.03	.01
492	2500										8.61	3.36	1.53	.77	.42	.25	09	.04	.02
589	3000											4.82	2.19	1.11	.61	.36	.14	.06	.03
686	3500											6.54	2.97	1.50	.83	.48	.19	.09	.04
786	4000												3.91	1.98	1.08	.63	.25	.11	.05
884	4500												4.94	2.51	1.36	.79	.32	.15	.07
984	5000												6.19	3.10	1.69	.99	.39	.18	.09
At 80 Pounds Gauge																			
7.74	50	14.31	3.96	1.53	.33	.10	.03	.01											
11.3	75		8.46	3.26	.71	.21	.08	.03	.01										
15 2	100		15.31	5 92	1.28	.39	.14	.06	.03	.02	.01								
19.4	125			9.64	2.09	.64	.24	.11	.05	.03	.01								
23 2	150			13.79	2.99	.91	.34	.15	.07	.04	.02	.01							
27.2	175				4.09	1.25	.47	.21	.10	.06	.03	.01							
31.0	200				5.34	1.63	.61	.27	.13	.07	.04	.01							
38.7	250				8.32	2.54	.96	.43	.21	.12	.07	.02	.01						
46 5	300				12.01	3.67	1.38	.62	.30	.17	.09	.03	.01						
54.2	350					4.99	1.88	.84	.41	.23	.13	.05	.02	.01					
62.0	400					6.53	2.45	1.11	.54	.30	.17	.06	.03	.01					
69.7	450					8 25	3.13	1.40	.69	.38	.22	.08	.04	.01					
77.4	500					10.81	3.83	1.73	.85	.47	.27	.10	.05	.02	.01				
92.9	600						5.61	2.46	1.22	.68	.39	.15	.06	.03	.02	.01			
108 2	700						7.46	3.37	1.66	.92	.53	.20	.09	.04	.02	.01			
124.0	800						9 86	4 42	2.18	1.19	.69	.27	.12	.06	.03	.02	.01		
139.5	900							5.61	2.77	1.54	.88	.34	.15	.08	.04	.02	.01		
152	1000							6.64	3.29	1.82	1.04	.40	.18	.09	.05	.03	.01		
232	1500							15.41	7.62	4.24	2.43	.95	.43	.22	.12	.06	.02	.01	
310	2000								13.62	7.58	4.32	1.69	.77	.39	.21	.12	.04	.02	.01
387	2500									11.79	6.88	2.64	1.19	.60	.33	.19	.07	.03	.01
465	3000										9.72	3.79	1.73	.87	.48	.28	.11	.05	.02
542	3500										13 25	5.27	2.35	1.19	.65	.37	.15	.06	.03
620	4000											6.78	3.07	1.55	.85	.49	.19	.09	.04
697	4500											8 54	3 89	1.97	1.08	.66	.25	.11	.05
774	5000											10 55	4.79	2.46	1.33	.77	.30	.14	.07

For longer or shorter pipes the friction loss is proportional to the length, *i.e.*, for 500 feet ½ of the above; for 4,000 feet four times the above, etc.

Delivery in Cu. Ft. of Compressed Air per Min.	Equiv. Delivery in Cu. Ft. of Free Air per Min.	Size of Pipe, Inches: 1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	16
		Loss of Pressure, in Pounds, by Friction in 1000 Feet Lengths of Pipe																	
At 100 Pounds Gauge																			
6.41	50	11.89	3.29	1.28	.27	.08	.03	.01											
9 61	75		7 42	2 87	.62	.19	.07	.03	.01										
12 81	100		13 20	5.11	1.15	.34	.12	.05	.02	.01									
15.81	125			7.75	1.68	.52	.19	.08	.04	.02	.01								
19.22	150			11.42	2 48	.76	.29	.13	.06	.03	.02	.01							
22.39	175				3 36	1.03	.39	.17	.09	.04	03	.01							
25.62	200				4.43	1.36	.51	.23	.12	.06	.04	.02	.01						
31.62	250				6 72	2 06	.77	.35	.17	.09	.05	.02	.01						
38.44	300				9.95	3 04	1.14	51	.25	.14	.08	.03	.01						
44.78	350				13.41	4.11	1.54	.69	.34	.19	.11	.04	.02	.01					
51.24	400					5.40	2 06	.92	.45	.25	.15	.05	.03	.01					
57.65	450					6 85	2.57	1.16	57	.32	.18	.07	.03	.02	.01				
63.24	500					8.21	3.08	1 39	.68	.38	.22	.08	.04	.02	.01				
76.88	600					12.21	4.58	2.14	1.03	.57	.33	.12	.05	.03	.02	.01			
89.56	700						6.19	2.79	1.38	.77	.44	.17	.07	.04	.02	.01			
102.5	800						8.13	3.67	1 81	1.00	.57	.22	.10	.05	.03	.02	.01		
115.3	900						10.23	4.64	2.29	1.27	.76	.28	.13	.06	.04	.02	.01		
126.5	1000						12.39	5.00	2.76	1.23	.88	.34	.16	.08	.04	.03	.01		
192 2	1500							12.81	6 68	3 51	2.03	.78	.36	.18	.09	.05	.02	.01	
256.2	2000								11.35	6.61	3 62	1.41	.67	.33	.18	.10	.04	.02	.01
316 2	2500									9.50	5.51	2.14	.97	.49	.27	.16	.06	.03	.01
384.4	3000									14.04	8 11	3.16	1.44	.76	.39	.23	.19	.04	.02
447.8	3500										10.95	4.26	1.93	.98	.53	.31	.12	.05	.03
512.4	4000										14.48	5.59	2.55	1.30	.72	.41	.16	.07	.04
576.5	4500											7.04	3.22	1.84	.89	.52	.21	.09	.05
632.4	5000											8.51	3.88	1.93	1.07	.63	.25	.11	.08
At 125 Pounds Gauge																			
5.26	50	9.88	2.70	1.05	.23	.07	.03	.01											
7.89	75	22.20	6.07	2.37	.51	.16	.06	.03	.01										
10.51	100	39.50	10.82	4.22	.91	.28	.10	.05	.02	.01									
13.15	125		16.88	6.58	1.42	.43	.16	.07	.04	.02	.01								
15.79	150		24.33	9.47	2.04	63	.23	.11	.05	.03	.02	.01							
18.41	175		33.05	12.90	2.78	.85	.32	.14	.07	.04	.02	.01							
21.05	200			16.84	3.63	1.11	.42	.19	.09	.05	.03	.01							
26.30	250			26.30	5.68	1.73	.65	.29	.15	.08	.05	.02	.01						
31.58	300			37.90	8.18	2.51	.94	.42	.21	.12	.07	.03	.01						
36.81	350				11.08	3.39	1.27	.58	.28	.16	.09	.04	.02	.01					
42.10	400				14.51	4.44	1.67	.75	.37	.21	.12	.05	.02	.01					
47.30	450				18.38	5.61	2.11	.95	.47	.26	.15	.06	.03	.01	.01				
52.60	500				22.68	6.95	2.61	1.18	.58	.32	.18	.07	.03	.02	.01				
63.20	600					10 00	3.76	1.69	.84	.46	.27	.10	.05	.02	.01	.01			
73.70	700					13 60	5.11	2.31	1.14	.63	.36	.14	.06	.03	.02	.01			
84.20	800					17.80	6.68	3.01	1.49	.83	.47	.18	.08	.04	.02	.01	.01		
94.70	900						8.45	3.81	1.88	1.04	.60	.23	.11	.05	.03	.02	.01		
105.1	1000						10.42	4.71	2.32	1.29	.74	.29	.13	.07	.04	.02	.01		
157.9	1500						23.48	10.59	5.23	2.90	1.65	.64	.29	.15	.08	.05	.02	.01	
210.5	2000							18.81	9.30	5.15	2.94	1.15	.52	.26	.15	.08	.03	.02	.01
263 0	2500							29.40	14.52	8.05	4.60	1.80	.82	.41	.23	.13	.05	.02	.01
315.8	3000								20.90	11.59	6.63	2.59	1.18	.60	.33	.19	.07	.03	.02
368.1	3500								28.51	15.78	9.01	3.53	1.61	.81	.45	.26	.10	.04	.02
422.0	4000									20.61	11.80	4.61	2.19	1.06	.58	.34	.13	.06	.03
473 0	4500									26.10	14.90	5.83	2.65	1.34	.73	.43	.17	.08	.04
526.0	5000									32.20	18.45	7.20	3.27	1.65	.90	.53	.21	.10	.05

For longer or shorter pipes the friction loss is proportional to the length, *i.e.*, for 500 feet ½ of the above; for 4,000 feet four times the above, etc.

DISCHARGE OF AIR THROUGH AN ORIFICE

IN CUBIC FEET OF FREE AIR PER MINUTE

Flowing From a Round Hole in Receiver Into the Atmosphere

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Receiver Gauge Pressure Pounds	Diameter of Orifice													
	1/64 inch	1/32 inch	1/16 inch	1/8 inch	1/4 inch	3/8 inch	1/2 inch	5/8 inch	3/4 inch	7/8 inch	1 inch	1 1/4 inch	1 1/2 inch	2 inch
	Discharge in Cubic Feet of Free Air per Minute													
2	.038	.153	.647	2.435	9.74	21.95	39.	61.	87.60	119.50	156.	242.	350.	625.
5	.0597	.242	.965	3.86	15.40	34.60	61.60	96.50	133.	189.	247.	384.	550.	985.
10	.0842	.342	.136	5.45	21.8	49.	87.	136.	196.	267.	350.	543.	780.	.
15	.103	.418	1.67	6.65	26.70	60.	107.	167.	240.	326.	427.	665.	960.	.
20	.119	.485	1.93	7.7	30.8	69.	123.	193.	277.	378.	494.	770.	.	.
25	.133	.54	2.16	8.6	34.5	77.	138.	216.	310.	422.	550.	860.	.	.
30	.156	.632	2.52	10.	40.	90.	161.	252.	362.	493.	645.	1000.	.	.
35	.173	.71	2.80	11.2	44.7	100.	179.	280.	400.	550.	715.	.	.	.
40	.19	.77	3.07	12.27	49.09	110.45	196.35	306.80	441.79	601.32	785.40	.	.	.
45	.208	.843	3.36	13.4	53.8	121.	215.	336.	482.	658.	860.	.	.	.
50	.225	.914	3.64	14.50	58.2	130.	232.	364.	522.	710.	930.	.	.	.
60	.26	1.05	4.2	16.8	67.	151.	268.	420.	604.	622.	.	.	.	.
70	.295	1.19	4.76	19.	76.	171.	304.	476.	685.	930.	.	.	.	.
80	.33	1.33	5.32	21.2	85.	191.	340.	532.	765.	1004.	.	.	.	.
90	.364	1.47	5.87	23.50	94.	211.	376.	587.	843.	.	.	.	.	.
100	.40	1.61	6.45	25.8	103.	231.	412.	645.	925.	.	.	.	.	.
125	.486	1.97	7.85	31.4	125.	282.	502.	785.	.	.	.	.	.	.

Cubic Feet of Free Air

Required to Run One Drill of Size and at the Pressure Stated Below.

Gauge Pressure Lbs	Cylinder Diameter of Drill												
	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/8"	3 3/16"	3 1/4"	3 1/2"	3 5/8"	4 1/4"	5"	5 1/4"
60	50	60	68	82	90	95	97	100	108	113	130	150	164
70	56	68	77	93	102	108	110	113	124	129	147	170	181
80	63	76	86	104	114	120	123	127	131	143	164	190	207
90	70	84	95	115	126	133	136	141	152	159	182	210	230
100	77	92	104	126	138	146	149	154	166	174	199	240	252

Multipliers to Determine Capacity of Compressor

Required to Operate from 1 to 70 Rock Drills at Altitudes Compared with Sea Level

Altitude Above Sea Level Feet	Number of Drills																		
	1	2	3	4	5	6	7	8	9	10	12	15	20	25	30	40	50	60	70
	Multipliers																		
0	1.	1.8	2.7	3.4	4.1	4.8	5.4	6.0	6.5	7.1	8.1	9.5	11.7	13.7	15.8	21.4	25.5	29.4	33.2
1000	1.03	1.85	2.78	3.5	4.22	4.94	5.56	6.18	6.69	7.3	8.34	9.78	12.05	14.1	16.3	22.0	26.26	30.3	34.2
2000	1.07	1.92	2.89	3.64	4.39	5.14	5.78	6.42	6.95	7.60	8.67	10.17	12.52	14.66	16.9	22.9	27.28	31.46	35.52
3000	1.10	1.98	2.97	3.74	4.51	5.28	5.94	6.6	7.15	7.81	8.91	10.45	12.87	15.07	17.38	23.54	28.05	32.32	34.56
4000	1.14	2.05	3.08	3.88	4.67	5.47	6.15	6.84	7.41	8.09	9.23	10.83	13.34	15.62	18.01	24.4	29.07	33.52	37.8
5000	1.17	2.10	3.16	3.98	4.8	5.62	6.32	7.02	7.61	8.31	9.48	11.12	13.69	16.03	18.49	25.04	29.84	34.4	38.84
6000	1.20	2.16	3.24	4.08	4.9	5.76	6.48	7.2	7.8	8.52	9.72	11.4	14.04	16.44	18.96	25.68	30.6	35.4	39.84
7000	1.23	2.21	3.32	4.18	5.04	5.9	6.64	7.38	7.99	8.73	9.96	11.68	14.39	16.85	19.43	26.32	31.36	36.16	40.84
8000	1.26	2.27	3.40	4.28	5.17	6.05	6.8	7.56	8.19	8.95	10.21	11.97	14.74	17.26	19.9	29.96	32.13	37.04	41.83
9000	1.29	2.32	3.48	4.39	5.29	6.19	6.96	7.74	8.38	9.16	10.45	12.26	15.09	17.67	20.38	27.6	32.9	37.92	42.83
10000	1.32	2.38	3.56	4.49	5.41	6.34	7.13	7.92	8.58	9.37	10.69	12.54	15.44	18.08	20.86	28.25	33.66	38.8	43.82
12000	1.37	2.47	3.70	4.66	5.62	6.57	7.4	8.22	8.9	9.73	11.1	13.02	16.03	18.77	21.64	29.32	34.94	40.28	45.48
15000	1.43	2.57	3.86	4.86	5.86	6.86	7.72	8.58	9.3	10.15	11.58	13.58	16.73	19.59	22.59	30.6	36.46	42.04	47.47

EXAMPLE—Required the amount of free air necessary to operate thirty 5-inch drills at 9,000 feet altitude, using to operate these drills air at a gauge pressure of 80 pounds per square inch.

From Table above we find, when operating the drills at 80 pounds gauge pressure at sea level, that one 5-inch drill requires 190 cubic feet of free air per minute.

From Table opposite we also find that the factor for 30 drills at 9,000 feet altitude is 20.38; multiplying 190 cubic feet by 20.38 gives 3,872 cubic feet free air per minute, which is the displacement of a compressor for the above outfit under average conditions, to which must be added pipe line losses, such as friction and leakage

HORSE POWER DEVELOPED TO COMPRESS 100 CUBIC FEET FREE AIR FROM ATMOSPHERE TO VARIOUS PRESSURES

Gauge pressure, pounds	One-stage compression D. H. P.	Gauge pressure, pounds	ASSUMING PERFECT COOLING BETWEEN STAGES		
			Two-stage compression D. H. P.	Three-stage compression D. H. P.	Four-stage compression D. H. P.
5	1.96	60	11.70	11.20	10.80
10	3.60	70	12.70	12.00	11.70
15	5.03	80	13.70	13.00	12.50
20	6.28	90	14.70	14.00	13.50
25	7.42	100	15.40	14.50	14.20
30	8.47	125	17.50	16.00	15.60
35	9.42	150	19.00	17.50	16.70
40	10.30	200	21.20	19.50	18.75
45	11.14	300	24.50	22.90	21.80
50	11.90	400	27.70	25.70	24.00
55	12.67	500	29.75	27.60	25.90
60	13.41	600	31.70	29.20	27.50
70	14.72	700	33.50	30.60	28.90
75	15.37	800	34.90	31.80	30.00
80	15.94	900	36.30	32.90	31.00
85	16.50	1000	37.80	33.80	31.80
90	17.06	1200	39.70	35.50	33.30
100	18.15	1400	41.60	36.80	34.60
150	24.00	1600	43.00	38.10	35.65
200	26.20	1800	44.50	39.30	36.70
400	36.00	2000	45.50	40.60	37.80
. .	. . . . .	2500	. . . . .	. . . . .	39.06
. . .	. . . . .	3000	. . . . .	. . . . .	40.15

An addition of 10 to 15 per cent. should be made for friction and intake temperature higher than 60 degrees Fahrenheit, on which this table is based, Atmospheric pressure is assumed at 14.7 pounds per square inch. No account taken of jacket cooling.

Courtsey H. K. Porter Co.

Horse Power of Double Acting, Single Cylinder Steam Engines:

$$HP = \frac{P \times L \times A \times N \times F}{33000}$$

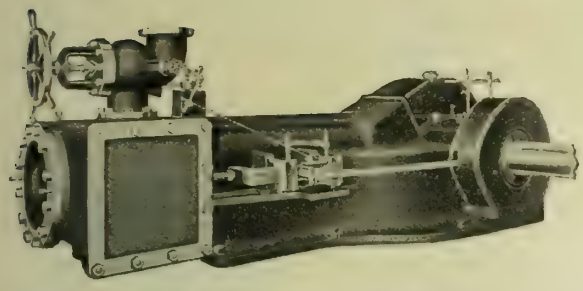
P = Gauge pressure at engine.
L = Length of stroke in feet.
A = Area of piston in square in.
N = Number of strokes per min.
F = Factor of cut-off.
= .599 for ¼ cut-off.
= .670 for 1-3 cut off.

THE BROWNELL COMPANY.

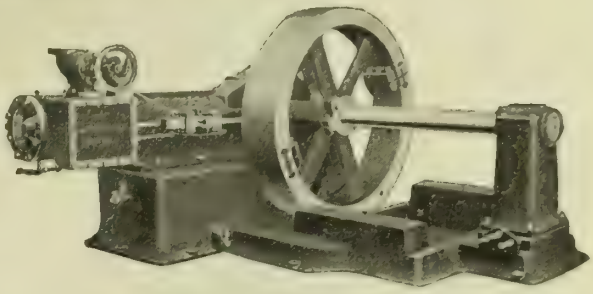
DAYTON, OHIO.

Manufacturers of

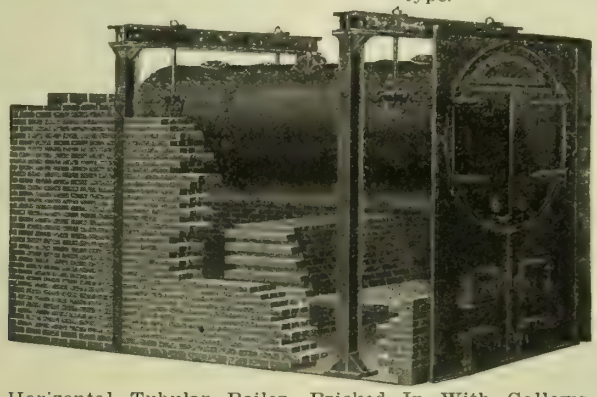
Engines, Boilers & Feed Water Heaters



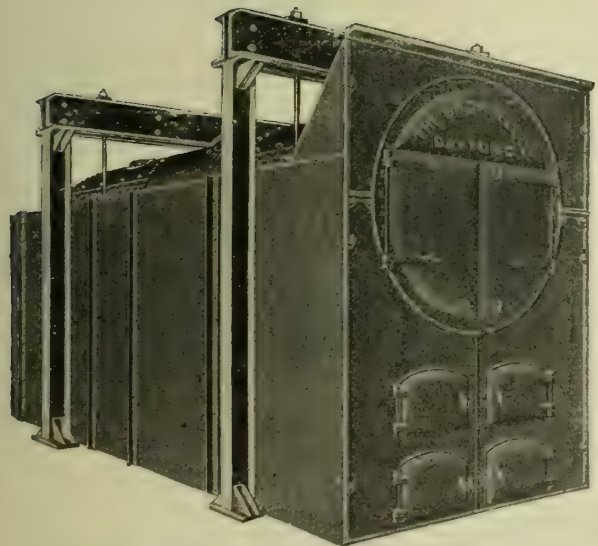
Enclosed Self-Oiling Fan Engine.
This engine can be furnished, if desired, with an adjustable cut-off operated by hand. It may be belted or direct connected to the fan.



Enclosed Self-Oiling Engine.
As shown above, this engine is built for direct connection to generator. It can also be furnished in belted type.

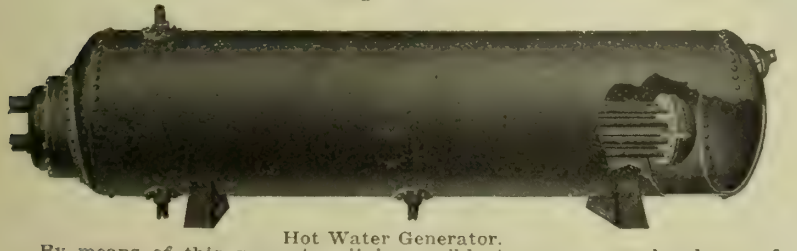


Horizontal Tubular Boiler, Bricked In With Gallows Frame.

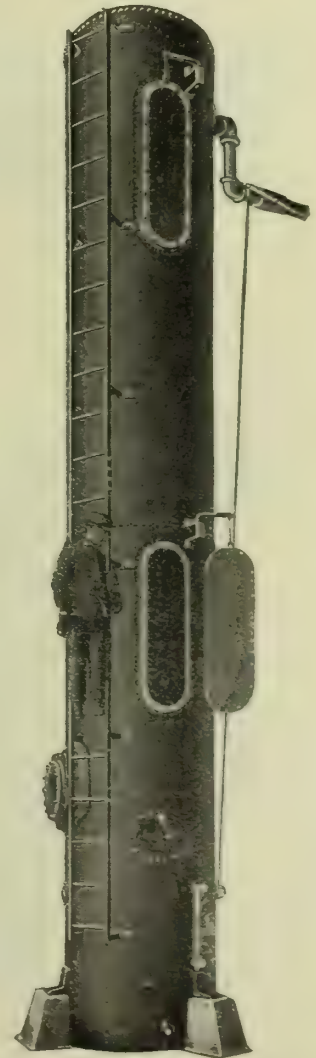


Horizontal Tubular Boiler, with Standard Box Type Steel Casing.

WRITE US FOR DETAILS



Hot Water Generator.
By means of this generator, it is possible to secure an abundance of hot water at an extremely low operating cost, since exhaust steam may be used.



Tower Heater, Open Type.

THE CASEY-HEDGES CO.

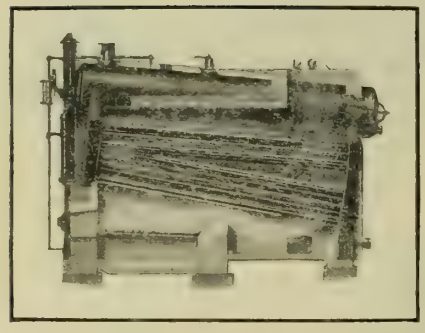
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CHATTANOOGA, TENN, U. S. A.

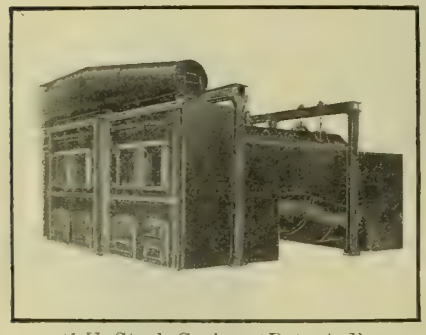
BRANCH OFFICES:

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Knoxville, Tenn.

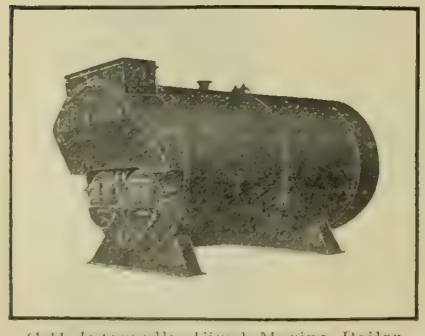
The Hendrie & Bolthoff Mfg. & Supply Co., Agents, Denver, Colo.



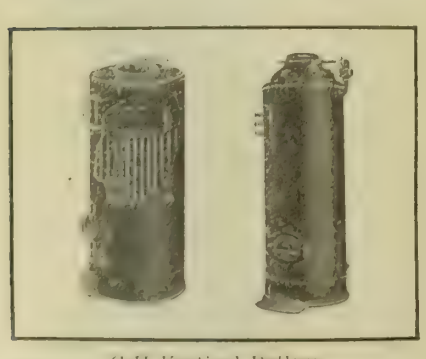
C-H Horizontal Water Tube Boiler



C-H Steel Casing (Patented)



C-H Internally Fired Marine Boiler



C-H Vertical Boilers

We manufacture both Horizontal and Vertical Water Tube Boilers. The Water Tube Boiler is the modern type of steam generator, and is recommended where large units are required, and where it is desired to save fuel.

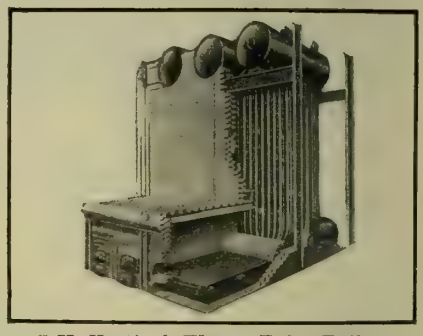
The C-H Patented Steel Casing is used on Return Tubular Boilers instead of the old fashioned brick work setting. It is air tight, more economical in fuel, eliminates expensive foundations, and will last the life of two boilers; reduces furnace repairs to almost nothing; made in Standard and Half Dutch Oven types.

The C-H Internally Fired Marine Boiler, especially adapted for mine service. It is self-contained, portable, free from repairs, and is ready for operation as soon as it is taken off car.

The C-H Compound Return Tubular Portable Boiler, is a step in the advance of the regular portable locomotive type boiler. It is a fuel saver, and occupies less space than any other type of boiler.

The C-H Vertical Boilers are made both in the full flush and submerged tube types. The construction is extra heavy, and the boilers are built for rough usage.

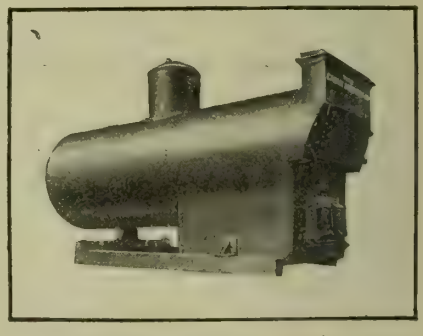
The C-H Shaking Grates are the simplest and most practical of all shaking grates. By their use, you can use your slack, and sell your good coal, cost very little more than ordinary grates, and last three times as long.



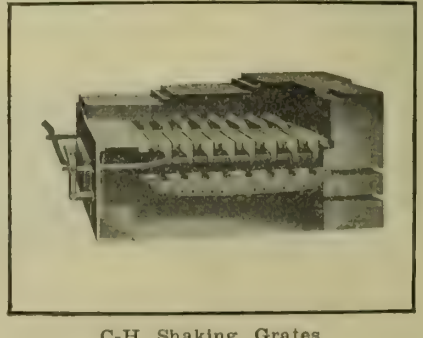
C-H Vertical Water Tube Boiler



C-H Half Dutch Oven Steel Casing



C-H Compound Return Tubular Portable Boiler



C-H Shaking Grates

ESTABLISHED 1864

E. KEELER COMPANY

WILLIAMSPORT, PA.

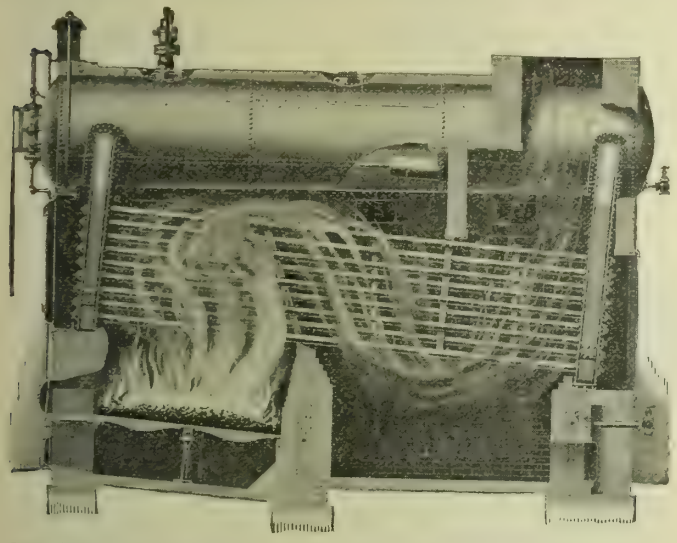
MANUFACTURERS OF

WATER TUBE AND RETURN TUBULAR BOILERS, STACKS, ETC.

NEW YORK PHILADELPHIA PITTSBURGH HUNTINGTON, W. VA. CLEVELAND CHICAGO

Keeler Water Tube Boilers.

Built in units from sixty to twelve hundred fifty horse power, wrought steel construction throughout.



Straight tubes, horizontal drums, vertical baffle walls, rear casing.

Every portion of the heating surface is accessible for both external and internal inspection, making it impossible for soot or scale to accumulate undetected. Special side cleaning doors make it possible to observe the condition of the outside surface of the tubes. There is no part of the internal surface that cannot be examined and cleaned.

The facility with which a straight tube is cleaned and, if necessary, replaced is only one of its obvious advantages. When the water contains scale-forming substances the use of a straight tube is almost imperative.

The superior efficiency of the Keeler Boiler rests upon correct proportion of heating and grate surface for the character of fuel to be burned, ample height of furnace, superior arrangement of baffle walls and a perfect circulation.

Our Water Tube Boilers are in use by the United States Government (five thousand horse power being used on the Panama Canal), Pennsylvania R. R. Co., New York Central R. R. Co., Buffalo, Rochester & Pittsburg R. R. Co., and in many Pennsylvania, West Virginia and Ohio coal mines.

It is cheaper to invest a trifle extra in first cost rather than to inherit later repair bills.

For fifty years we have been building boilers, during that time our shop has never been shut down, and we have never known of a Keeler Boiler exploding.

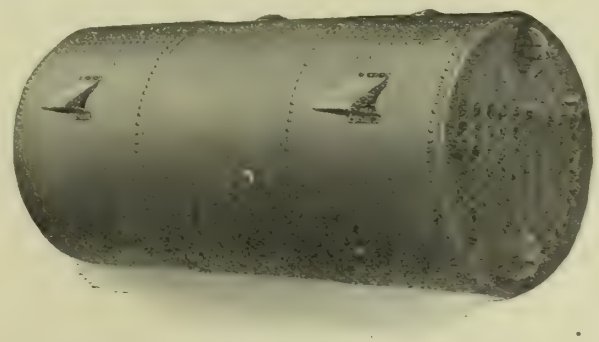
Our new illustrated catalogue furnished on request.

Keeler Return Tubular Boilers.

Have a reputation for high quality of fifty years' growth. Rivet holes are made ⅛″ small and after boiler plates are assembled the holes are reamed to size. This insures perfect alignment. All burs are removed before riveting, tube holes are drilled from the solid plate and not punched small and reamed to size. The holes are slightly countersunk on the outside. This eliminates the possibility of the sharp edge cutting the tube when beading it. All seams are thoroughly caulked on the outside, and the ends of butt straps are caulked on the inside. All plates are full thickness on the edge and not ordered to weight. Braces are drop forged; trimmings, including steam-outlets, man-hole plates, yokes and brackets, are all of pressed steel. Besides being stronger than cast iron they are of known quality. Cast iron is unsatisfactory for pressure parts; it frequently has sand or air holes which cannot be detected by surface inspection.

A steam separator is located inside of the boiler shell at the steam outlet. This insures dry steam and prevents water entering steam pipe and engine cylinder. An internal feed pipe enters the boiler through the front head at one side, extends nearly the length of the shell, crosses over to the center and discharges through an elbow looking down.

The chief difference in boilers today is in the attention given to details. This is why one boiler costs more than another where specifications are practically the same. The cost of the boiler itself is a small part of your total cost. A cheaply constructed tubular boiler may have to be removed in a short time and you will have to charge off as a total loss money spent for freight, hauling, labor, brick setting and stack erection. The amount of money saved in buying what is known as a competition boiler generally proves to be an unwarranted risk. A Keeler boiler will never be anything but the best that our resources and fifty years of experience can produce.



Ask for our book—"Boiler Facts."

THE GEORGE T. LADD CO.

Pittsburgh, Pa.

Manufacturers of

The Milne Water Tube Boiler

MILNE WATER TUBE BOILER

Patented—Others Pending.

Products

We manufacture Milne Water Tube Boilers in sizes from 125 H. P. to 1500 H. P. in type as illustrated, and up to 2500 H. P. in Multi-Drum type.

Distinctive Features

Elimination of scale troubles due to confining of precipitates in feed box in lower drum.

Raising of entering feed water to boiler temperature before entering the general circulatory system.

Low stack temperature as a result of bringing gases in last pass in contact with entering feed.

High efficiency due to staggered tubes and manner of presentation of tube surface to heated gases with elimination of dead spaces in boiler setting.

Steady water line and dry steam due to unrestricted and direct flow of mixtures of steam and water, with ample liberating, steam and water storage spaces.

Minimum number of spare tubes required; all tubes are bent to one radius, and fewer spares are required than in any other type or design of bent tube vertical boiler.

Simple and elastic in form of construction and thoroughly accessible for cleaning and renewals of tubes or the making of repairs. No hand hole plates to remove or joints to break.

Substantial supports and bindings. All supporting elements thereof, together with fronts, are structural steel, having high factor of safety, set entirely outside of lines of brick work. No cutting or fitting of brick work required by this construction. This feature is furnished by the MILNE boiler alone, preventing all air leaks, thereby greatly increasing the efficiency.

Special attention given to the avoiding of all air leaks in setting, by the encasing of the entire side walls of the furnace in a reinforced steel jacket and the use of securely locked cleaning out doors closing upon asbestos seating strips.

Elimination of all buck stays, anchor bolts, skewback supports and other inefficient members.

Lowest cost of brick work per horse power.

Maximum life of setting and low cost of upkeep due to properly supported and constructed arches and a fire brick lining of twice the thickness employed in other types of boilers.

Absolutely no flat or stayed surface or cast metal used in construction.

Each tube is easily removable.

Unrestricted Circulation.

Proper Method of Feeding.

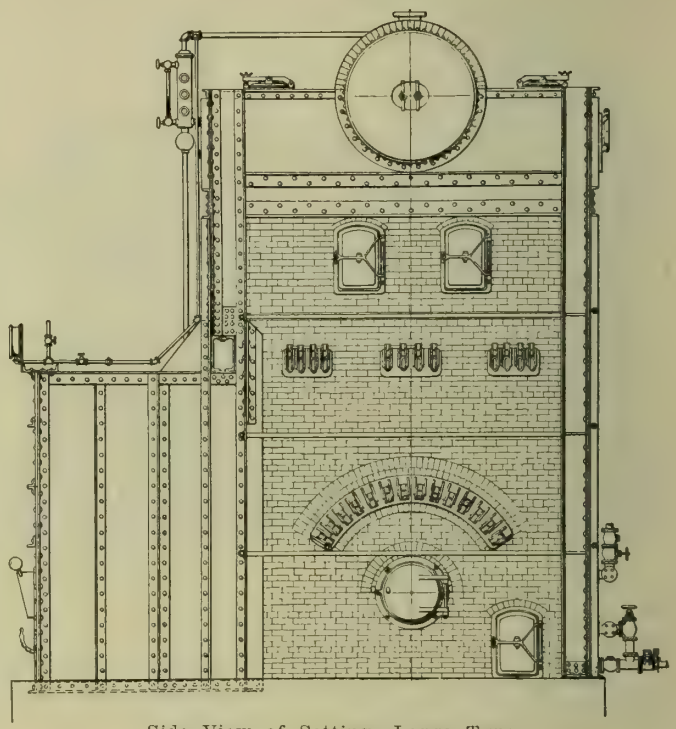
Large Overload Capacity.

Simple and Flexible.

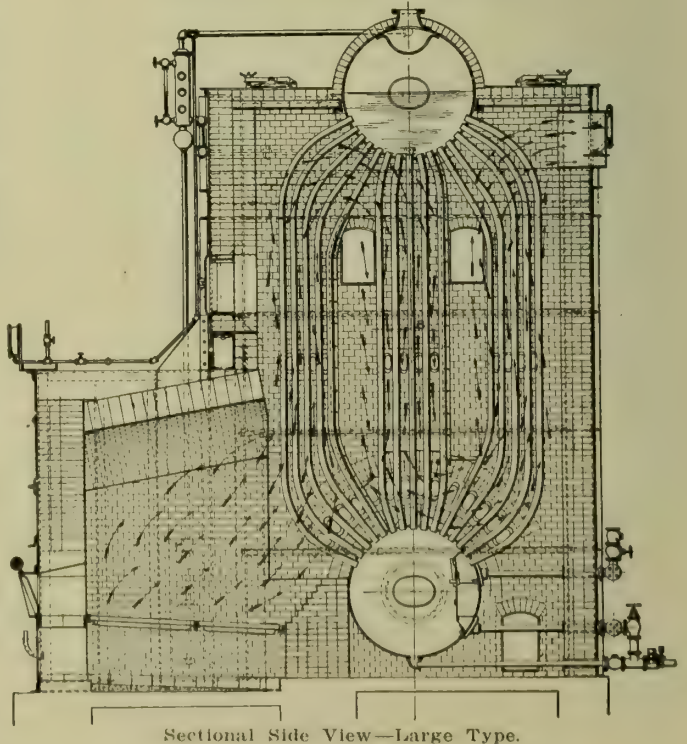
Long Life of Arch.

Fire Brick Lining, all 9 inch Headers.

Write for Bulletin No. 16 and list of prominent users.



Side View of Setting—Large Type.



Sectional Side View—Large Type.

UNION IRON WORKS,

Cascade Street, ERIE, PA.

MANUFACTURERS OF STEAM BOILERS.

Branch Offices: Cleveland, New York, Pittsburgh, Philadelphia.

Union Water Tube Boilers.

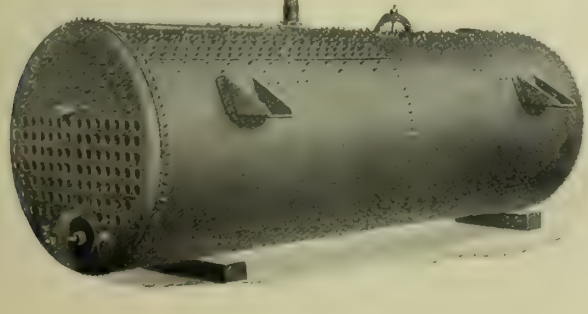
Built in sizes ranging from 100 to 500 Horse-power —and for any pressure up to 200 pounds.

Pressed steel pear-shaped handhole plates, one opposite each tube. Patented corrugated connections between the headers and the drums, which provide ample space for an unrestricted circulation, and yet give a flexibility to the joint. Patented feed-water delivery, whereby over 50 per cent of the sediment is deposited and removed, before passing into the boiler proper. Features of the "Union" Boiler: Perfect Combustion—Economy of fuel, space, and maintenance—Perfect Circulation—Dry Steam—Elasticity—Steady Water Level—Accessibility—Durability.



Union Return Tubular Boilers.

For working pressure 100 to 150 pounds. Built in sizes up to 225 Horse-power. Constructed in strict accordance with any special state laws, and under the inspecion of the Hartford Steam Boiler & Insurance Co. Specially adapted for coal mine use, and widely known throughout the coal regions. The following partial list, of installations by coal companies, amounting to over one thousand boilers, should be sufficient assurance of the quality and reliability of "Union" Boilers. Practically all of these boilers are 72"x18" return tubulars.



Coal Mine Installations.

United C & C Co.... Meadowlands, Pa
Imp. Colliery Co. .. Paint Creek, W. Va.
Caroon Coal Co. ..... Coalburg, W. Va.
Morris & Guild Co. .... Kings Mine, O.
W. Va. Colliery Co. ... Coalburg, W. Va.
Norris Mfg. & Mining Co. New Salisbury, O.
Pittsburg Coal Co. .. Fayette City, Pa.
Dry Branch Coal Co. .. Coalburg, W. Va.
United C. & C. Co. . Meadow Lands, Pa.
Harvey C. & C. Co. ... Harvey, W Va.
Glens Run C. Co. ..... Dillinvale, O.
K. & H. Coal & Coke Co. Mammoth, W. Va.
Beech Creek C. & C. Co., Winburne, Pa.
Pgh. & Buffalo Co. ..... Bruce, Pa.
Pgh. & Buffalo Co. ..... Anderson, Pa.
Missouri City C. Co... Missouri City, Mo.
Dunkirk Coal Co. ..... Frey Sta., Pa.
Naomi Coal Co. .... Fayette City, Pa.
Great Lakes Coal Co.,.. Karns City, Pa.
Bell Creek Min. & Mfg. Co. Belva, W. Va.
Winifred Coal Co. .... Wifinred, W. Va.
Cabin Creek Mining Co. .... Acme, W. Va.
Schoenberger Coal Co. .... Baird, Pa.
Manf'rs Coal & Coke Co... Novinger, Mo.
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McNab oal Co. ..... Salem, O.
Fremont-Yarpan Co. ..... Fremont, O.
Morris & Guild Co. ..... Camoridge, O.
Collins Coal Co. ..... Ehrmandale, Ind.
Naomi Coal Co. ..... Naomi, Pa.
Leewood Colliery Co. .. Leewood, W. Va.
Bellecliaire C. Co. .... Leewood, W. Va.
Neff Coal Mining Co. St. Clairsville Jct. O.
Mt. Carmel C. & C. Co. .. Belva, W. Va.
Buckeye Coal Mining Co. ..Flushing, O.
Somerset Coal Co. .. Elk Lick Mines, Pa.
Somerset Coal Co. Wilson Creek Mine, Pa.
Mecca C. & C. Co... Montgomery, W. Va.
Republic Coal Co. ..... Carbon, W. Va.
Trace-Hamilton C. M. Co.... Zaleski, O.
Austen C. & C. Co. .... Austen, W. Va.
Raccoon Val. C. Co. .. Trauged Sta. Pa.
H. C. Frick Coke Co... Trauger Sta. Pa.
Northern Fuel Co..... Jacksonville, O.
Great Lakes Coal Co... Queen Jctn., Pa.
Rainbow Coal Mining Co., Caledonia, Ind.
Neff Coal Mining Co.. St. Clairsville, O.
Glens Run Coal Co. .... Rush Run, O.
Forsythe Coal Co..... Mineral Siding, O.
Neff Coal Mining Co... St. Clairsville, O.
Great Lakes C. Co..... Queen Jctn., Pa.
Weaver Coal & Coke Co..... Warnock, O.
Relleclaire Coal Co. .... Decota, W. Va.
XL Coal Co. ..... Bergholz, O.
U. S. Coal Co. ..... Dillonvale, O.
United Coal Co. ..... Decota, W. Va.
Black Diamond C. & M. Co. Drakesboro Ky.
Fluhart C. & M. Co. .... Wellston, O.
Great Lakes C. Co. .... Queen Jctn, Pa.
A. Gibbs Coal Co. ..... Shawnee, O.
Summit Coal Co. ..... Fl[illegible]shing, O.
Rainbow C. anl M. Co. Caledonia, Ind.
Cornelia Mining Co. ..... Wellston, O.
H. C. Frick Coke Co. Darent Station, Pa.
Jobs O. H. Coal Co..... Shawnee, O.
Lake Erie Gas C. & C. Co. Burgettstown, Pa.
Raven Coal and Coke Co. Greendale, W. Va.
Hughes Creek C. Co. .. Mitchell, W. Va.
Northern Fuel Co. .... Jacksonville, O.
Dorfee Coal Mining Co. .. Dorfee, W. Va.
Lake Erie G. C. & C. Co. Burgettstown, Pa.
Lake Erie G. C. & C. Co. . Braznell, Pa.
England & Johnson C. C. ..McKitrick, O.
Morris Coal Co. ..... Cambridge, O.
Great Lakes C. Co. ..... Kaylor, Pa.
Otter Creek Coal Co. .... Diamond, Ind.
Lucas-Ray C. Co. ..... Turner, W. Va.
O. & N. W. C. M. Co..... Cambridge, O.
New Eng. Coal Co. ..... San Toy, O.
Caledonian Coal & C Co. Leewood, W. Va.
Cardiff Coal Co. .... Elk Ridge, W. Va.
Reliance C. & M. Co... Shelburne, Ind.
Carl Coal Co. ..... Carlton, O.
Columbia Coal Co. ..... Fairpoint, O.
W. & P. Coal Co..... W. Middleton, Pa.
Naomi Coal Co. .... Fayette City, Pa.
Walnut Hill C. M. Co... Cannelville, O.
Beech Creek Coal & Coke Co. Winburne, Pa.
Quemahoning Coal Co. .. Ralphton, Pa.
Chas. F. Keeler C. C. ... Atherton, Ind.
Carver Bros. Co. .... Diamond, W. Va.
Huston Coal Co. ..... Davis, O.
Chas. F. Keeler C. Co. , Atherton, Ind.
Lucas-Ray C. Co. ..... Turner, W. Va.
C. C. & M. Co. .. West Columbia, W. Va.
Carbon Coal Co. ... South Sarbon, W. Va.
Puritan Coal Co. ..... Byesville, O.
Gallia Mining Co. ..... Clarion, O.
Jackson Hill C. and C. Co. Kolsem, Ind.
Centennial Coal Co. .... Louisville, Col.
Mohr-Minton Coal Co. .... McArthur, O.
Brown-Lam Coal Co... Mercer Sta., Ky.
Braznell Gas Coal Co. .. Bentlepville, Pa.
Neff Coal Mining Co. ..... Neff, O.
Sunnyside Coal Mining Co. Walsenburg, Col
Gordon C. & M. Co. .. Stewartsville, O.
Standard H. V. C. Co... Crooksville, O.
O'Gara Coal Co ..... Harrisburg, Ill.
Saltsburg C. M. Co. ..... Edri, Pa.
Green Ridge Mining Co. Green Ridge, Ill.
A. G. Blair Mining Co. ..... Adena, O.
Hart-Williams C Co. ..... Benton, Ills.
Benton Coal Co. ..... Benton, Ills.
Pursglove Coal Mining Co. . Maynard, O.
Greenridge Mining Co... Greenridge, Ill.
O'Gara Coal Co. ..... Harrisburg, Ill.
Buckeye Coal Mining Co. . Flushing, O.
Hillside Coal Co. ..... Hillside, Ky.
O'Gara Coal Co. ..... Harrisburg, Ill.
Bakewell Coal Co..... Bellaire, O.
O'Gara Coal Co. ..... Eldorado, Ill.
Great Kanawha Col. Co. Mt. Carbon, W. Va.
Cabin Creek Mining Co. .. Kayford, W Va.
O'Gara Coal Co. ..... Eldorado, Ill.
Chesapeake Mining Co. .. Handley, W. Va.
Wender Blue Gem Coal Co... Halsey, Ky
R. T. Price C Co. .... Zanesville, O.
Quincy Coal Co. .... Dickinson, W. Va.
Thompson-Conn. C. Co. Republic Sta. Pa.
W. & L. E. Min. Co. ..... Herrick, O.
Davis Bros ..... Shawnee, O
Jas. S Strabley C. Co.... Salineville, O.
O'Gara Coal Co. ..... Harrisburg, Ill.
Burk Hollow Coal Co. .. Burk Hollow, Ky.
MacDonald Coal Co. .. MacDonald, W. Va.
Great Lakes Coal Co ..... Kaylor, Pa.
National Coal Co. ..... Byesville, O.
Domestic Coal Co. ..... Raven, Va.
Zeller, McClellan & Co. .. Diamond, Ind.
Wake Forest M. Co. Wake Forest, W. Va.
Crittenden C. & C. Co. .... Sturgis, Ky.
Roderick Coal Co. ..... Quick, W. Va.
Blue Creek C. & L. Co. . Blakely, W. Va.
Prudence Coal Co. .... Harvey, W. Va.
Thomas C. & C. Co. ..... Mora, W. Va.
Puritan Coal Co. ..... Byesvil'e, O.
Cecil Coal & Coke Co. .... Cecil, W. Va.
People's Coal Co. ..... Brownsville, Pa.
Bannock Coal Co. ..... Bannock, O.
C. E. Tibbals C. Co... Lower Greasy, Ky.
LaFollette C.I.&R.R. Co. Roosevelt, Tenn.
Kentucky C. M. Co. .... Waverly, Ky.
Middle Creek C. Co. ....Prestonburg, Ky.
National Coal Co. ..... Byesville, O.
Ebey C. & M. Co. ..... Middleport, O.
Dry Branch Coal Co. . Dry Branch, W. Va.
Almer Simons ..... Redfield, O.
O'Gara Coal Co. ..... Ledford, Ills.
Bannock Coal Co. ..... Bannock, O.
Carbon Coal Mining Co. .... Lathrop, O.
O'Gara Coal Co. .... Harrisburg, Ills.
Sunday Creek Co. ..... Jobs, O.
Allegheny Coal Min. Co. .. Conifer, Pa.
Carroll and Franklin Co. .. Smothers, Ills.
Herriott Coal Co. ..... Newhouse, O.
Otter Creek Coal Co. ... Fontanet, Ind.
O'Gara Coal Co. ..... Harrisburg, Ills.
O'Gara Coal Co. ..... Ledford, Ills.
River & Rail C. & C. Co. Uniontown, Ky.
The Salem Co. ..... Salem, O
Campbell C. & C. Co. .... Dilley, Tenn.
Starr Hocking Coal Co. ..... Starr, O.
Louisa Coal Co. ..... Torchlight, Ky.
W. P. Rend Col. Co. ..... Sesser, Ills.
Allegheny Riv. Mining Co. ..Conifer, Pa.
Beech Creek C. Co.. Beech Creek Jct., Ky.
W. Va. Colliery Co. ..... Decota, W. Va.
Cambridge Val. C. Co.... ..Byesville, O.
F. Grafton C. & C. Co. . Thornton, W. Va.
Hiawatha C. & C. Co. .. Hiawatha, W. Va.
Oak Forest Coal Co... Charleston, W. Va.
Sunday Creek Co. .... Mammoth, W. Va.
Pruden Coal & Coke Co... Pruden, Tenn.
Union-Connellsville C. Co. Uniontown, Pa.
S. Caol & Trans. Co. .... Robards, Ky.
Williams Coal Co. .... Morris, W. Va.
Maynard Coal Co. ..... Rutland, O.
Atlas-Pocahontas C. Co. .. Antler, W. Va.
Troll Coal Mining Co. ..... Trolls, O
N. Y. Clay & Mining Co. .. Buchtel, O.
Maynard Coal Co. ..... Cannelville, O.
Peh-Westmoreland C. Co. Bentleyville, Pa.
H. T. Wilson C. Co. .... Logan, W. Va.
Sunshine C. & C. Co. ..... Martin, Pa
Panther Run Coal Co. ... Sherwood, Pa.
Sterling Coal Co., Ltd. Washingtonville, O.

THE WICKES BOILER CO.

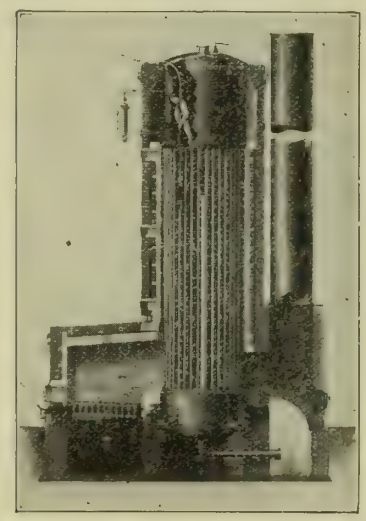
Manufacturers of Steam Boilers

Main Office and Works: Saginaw, Michigan. Sales Office in Principal Cities.

Wickes Vertical Water Tube Boilers and Steel Cased Boiler Settings

Products
The Wickes Vertical Water Tube Boilers.

Water Tube Boilers have proved their efficiency. The Wickes Vertical Water Tube Boiler has proven its superiority. First: It is constructed entirely of homogeneous material and uses straight tubes. Second: It operates with high commercial efficiency—the sum of all efficiencies.



Ask the Man Who CLEANS One.

A commercially efficient boiler is one which develops the greatest number of boiler horsepower hours per year with the highest thermal efficiency, while delivering the driest steam.

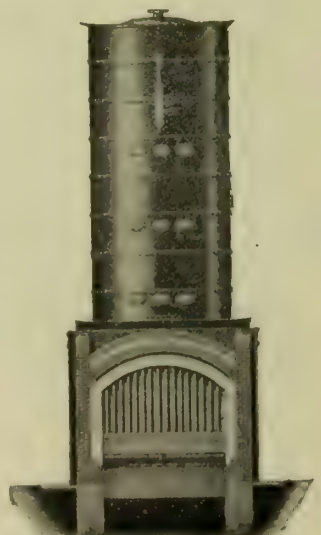
Cleaning and repairs cause boilers to stand idle. This lost time reduces its commercial efficiency. Therefore, that boiler is best which:

1st. Is so accessible that it can be cleaned in the shortest possible time.

2nd. Is simple, has few parts, and whose water circulation is so perfect as to maintain equal temperature in all parts of structure; hence, is durable; hence, free from repairs.

3rd. Prevents low furnace temperature, gas short circuiting and air infiltration. These are the enemy to high thermal efficiency.

4th. Delivers dry steam, hence prevents consuming unnecessary water, causing low engine and turbine efficiency and mechanical breakage.



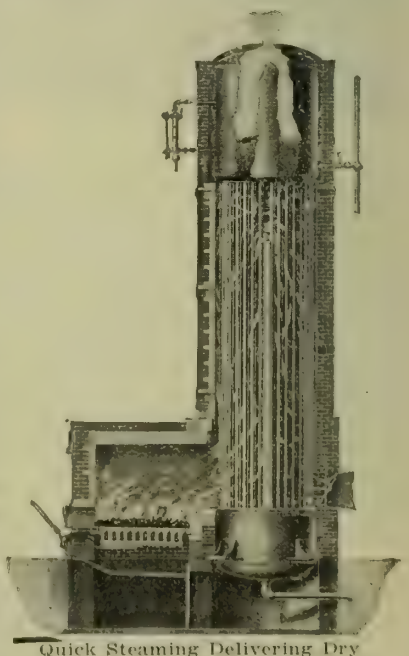
The Steel Cased Setting.

Accessibility and Cleaning

In the Wickes Vertical Tube Boiler two 11x15 inch manholes open in this boiler—one top—one bottom—inspection and cleaning is a simplified matter. Every tube can be looked through, washed or scraped. A boiler easy and quick to clean is likely to be cleaned often and well, that is human nature. If you have ever cleaned a boiler and lamed your back, bruised your knees, and skinned your elbows doing it you will appreciate the accessible construction of this vertical boiler at a glance. Two men can open, turbine and close this boiler in ten hours. You know how long it takes to clean some boilers.

Thermal Efficiency.

In The Wickes Vertical Water Tube Boiler high furnace temperature results from Dutch oven. Gases entirely and closely surround, therefore, scrub heating surface from entrance to release. There is no possible chance for short circuiting. The boiler heating surface absorbs the heat—empty pockets in setting lose heat. There are no empty pockets in this boiler. The steel cased settings are always tight, no cracked, warped, leaky, defective and unsightly settings exist with this type. A steel cased setting is a simple and sure cure for air infiltration losses. The largest preventable losses we have to contend with in boiler efficiency are excess air losses. A very long gas travel—hence long contact with heating surface is provided. Heat absorption is, therefore, assured.



Quick Steaming Delivering Dry Steam.

High Steam Quality.

Did you ever wreck an engine by pulling water into it from boiler? Study this boiler. The steam drum gives great height from water line to steam outlet nozzle. This height provides room for separation of the steam from the water which is entrained with it at a point close to the surface of liberation. You do not pull water into engine from this boiler. Steam turbines receiving steam from this boiler never have their nozzles or blades eroded or filled up with matter carried over from boiler.

McCLAVE-BROOKS COMPANY

Manufacturers of

Stokers; Shaking, Cut-off and Dumping Grates, and Steam Blowers

NEW YORK OFFICE
351 Fulton Bldg., 50 Church St.

MAIN OFFICE & WORKS
SCRANTON, PA.

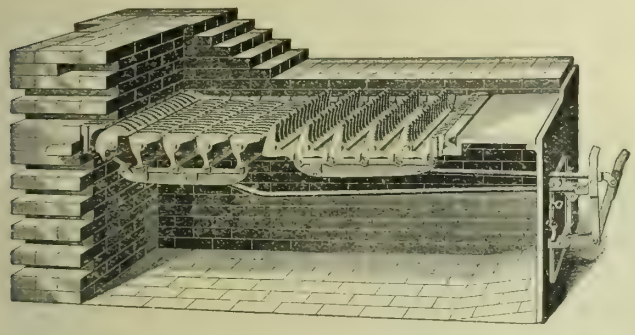
CHICAGO OFFICE
708 Fisher Bldg.

PRODUCTS

McClave Grates; Shaking, Cut-off and Dumping Movements; Sectional Removable Top Bars; McClave Stokers; McClave Furnaces; McClave Argand Steam Blowers. All kinds of Iron and Brass Castings.

The McClave System

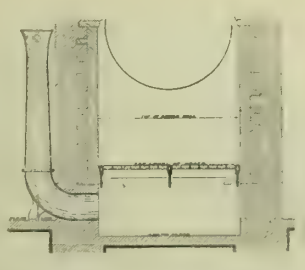
McClave Grates, with Argand Steam Blower, are designed for burning the cheaper and finer grades of fuel. Better combustion of fuels, such as anthracite buckwheat, birdseye, rice, bituminous slack, screenings, duff, etc., is produced by a forced draft.



Grates Nos. 1 and 2 are principally used for Soft Coal; Nos. 3 and 4 for smaller sizes of Hard Coal. Grate bars are furnished with suitable mesh for the fuel to be burned, 3-32 in. mesh being the smallest. All burn larger sizes by natural draft.

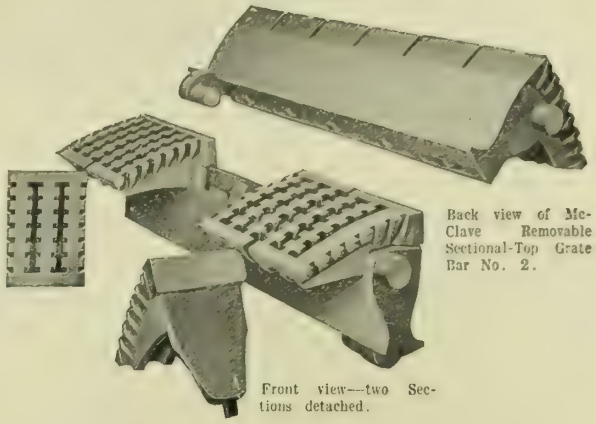
Details of Construction

Grates No. 1 and No. 2 have an absolute cut-off movement in which each row can be operated as a whole, or the front and rear separately, as desired; also a shaking movement in which there is no increase in the openings between the bars, consequently no waste of unconsumed fuel.



In the No. 1 Grate the regular grate bars are cast integral, i. e., the top and pendant portions are cast in one piece. In No. 2 Grate the regular grate bars are made with sectional removable tops, similar to the No. 3 Grate.

Grate No. 3 has a double cut-off movement, in which each row can be operated as a whole, or the front and rear separately. The grate bars are made with sectional removable tops.



Back view of McClave Removable Sectional-Top Grate Bar No. 2.

Front view—two Sections detached.

Grate No. 4A is a dumping grate fitted with twin levers for operating the front and rear series of bars separately. The grate bars are made with sectional removable tops which overlap each other, and have beveled edges which allow for the expansion of the top without interfering with the use of firing tools when cleaning fire.

All journal bearing bars have expansion tops made with locking caps and plugs over the journals which prevent the bars from jumping out of the journals when cleaning the fire. All forgings and fittings are drop forged.

Argand Steam Blower

Designed and improved for furnishing blast to burn cheaper grades of hard and soft coal. They furnish a large volume of air with a small amount of steam—both being thoroughly mixed in the shell or case. They are almost noiseless in operation. Capacities are based on 90 to 100 lbs. steam pressure.

Data for Engineers and Mine Owners

McClave grates have no long lines of metal in contact with the heat, consequently cannot warp from the action of the heat of the fire on the grate. The sectional tops are interchangeable and easily replaced when required.

The movements of the grate provide methods for cleaning fires in the least possible time and without waste of unconsumed fuel. Grate bars are made with different sized meshes to suit the various grades and sizes of fuels, from 3-32 in. upwards. The constructions as a whole are very strong and durable.

Illustrated Catalog "K" furnished on application.

NEEMES BROTHERS

Manufacturers of

Square and Round Grates

Established 1874

Main Office and Works

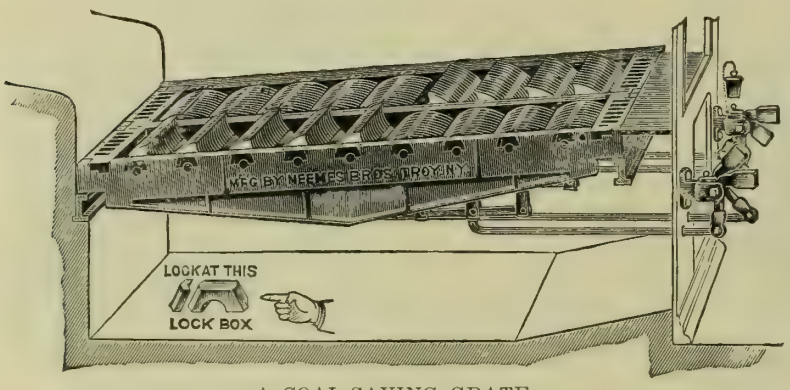
185 First Street, Troy, N. Y.

REPRESENTATIVES

Babcock & Wilcox, Ltd.....Montreal. Can,
Sole Makers for Canada.
The Burke Engineering Co.....525 Industrial Trust Bldg., Providence, R. I.
Sole Agents for the New England States.
C. F. Catillaz.....30 Church St., New York, N. Y.
Jeffery-Griner Machinery Co.....Bourse Bldg., Philadelphia, Pa.

Products

Shear-cutting, Shaking and Dumping Grates, Stationary Grate Bars, Steam Blowers, Castings of all kinds, Strong Iron a Specialty, General Foundry Work.



A COAL-SAVING GRATE
A grate which uses the coal wastelessly and which is so constructed that long life and continually satisfactory grate service are features.

Neemes Brothers' Improved Clinker Cutting, Shaking and Dumping Grate

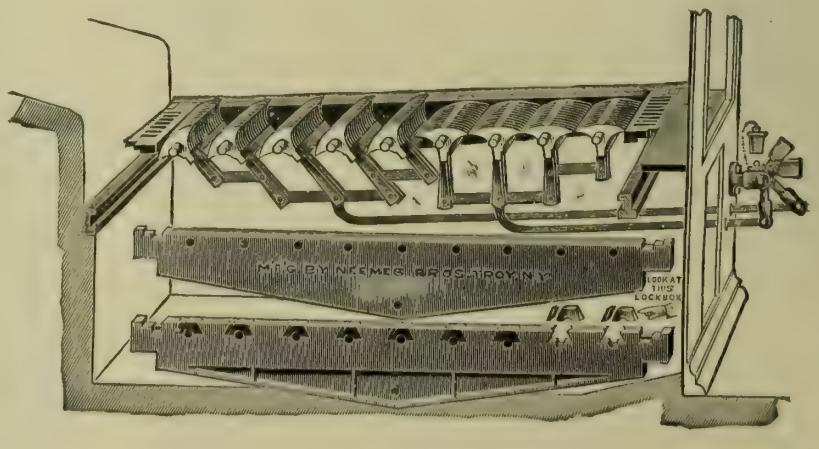
It is a triple value grate—enables you to shake out your ashes, cut out your clinkers, or dump your fire, if necessary. This grate cuts the clinker from both sides of the shaker alike. This is the kind of grate that is wanted today, and not one that merely shakes out a little ashes. It burns all kinds and grades of fuel, and burns it all up. The construction of the grate is strong. The teeth cannot break off, as we cut and crush the clinker in the center of the concaved teeth, and not on the points of the teeth. It is easy to operate, thoroughly dependable; it accomplishes perfect results with cheaper coal and with less coal than you are now using, thus effecting a double saving, and assures perfect combustion of any grade you may use. The Lock Box is also an important feature. When the shakers are set in the frame, and the boxes put in with the Locks, no shaker can possibly raise in the fire.

This grate is backed by many years' experience as grate manufacturers.

Grate cannot buckle, warp or get out of shape, as provision is made for the expansion in the side bars and boxes.

We fit any furnace without alteration of brick work, and rest upon the same bearing bars that any straight set of grates rests on. Send for full details.

All our castings are made of Strong Iron.



THOMAS GRATE BAR COMPANY

BIRMINGHAM, ALA.

Thomas Wiggling---Shaking---Dumping Grate Bars

PATENTED

Run your steam plant continuously without having a cleaning period.

Increase the steaming of your boilers.

Save fuel in the operation of your plant.

Reduce the fireman's labor from handling coal and cleaning.

Give a continuous high steam pressure.

Save opening fire door for slashing and cleaning —Turning cold air in furnace against sheets, tubes and walls and wasting fuel.

Cannot get out of fix and refuse to work as other makes ultimately do.

Put your Steam and Grate Bar Problems up to Thomas.



Side View.

Structure

Two curves—top and bottom, joined together at each side with spacing and connecting lugs, one-third contact, two-thirds air space, so as heat cannot equalize itself, the under portion never getting hot cannot crystalize and break or become distorted and locked.

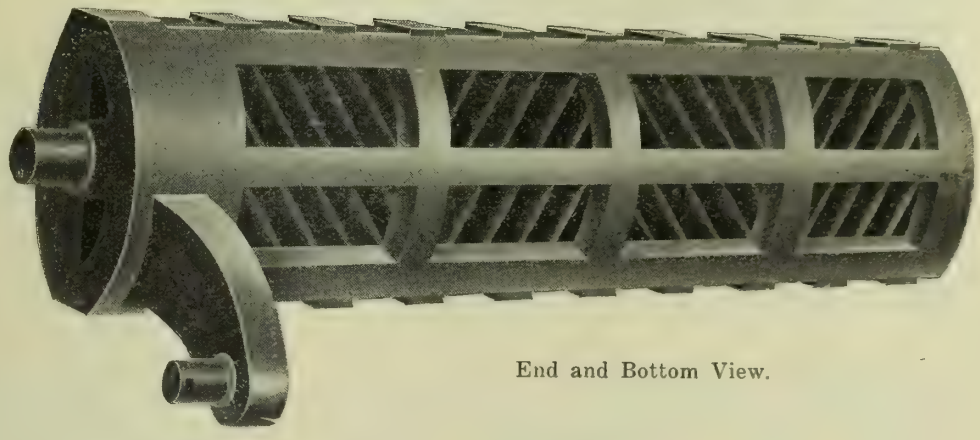
Advantages

A solid structure and indestructible from fair means.

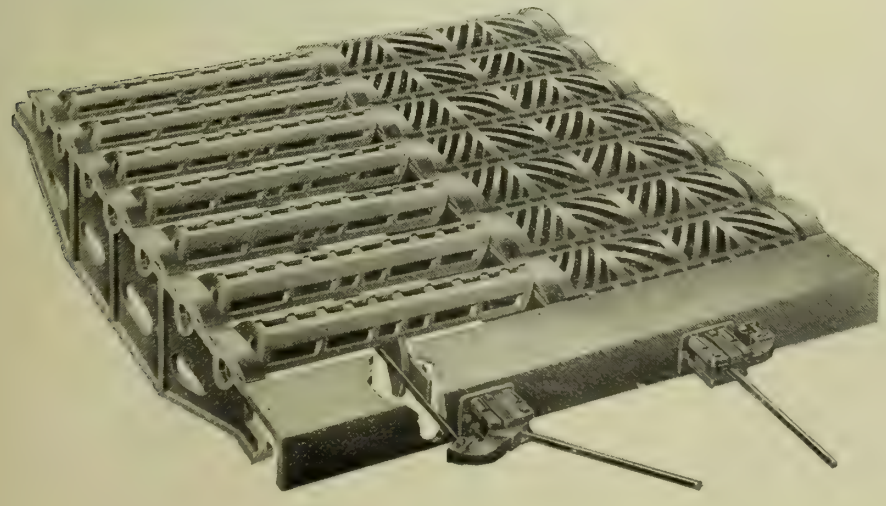
Last longer and cost less.

Made of pig iron that is bought on analysis, the best known for grate bar purposes.

Interchangeable — all bars standard—no rights and lefts.



End and Bottom View.



Operation

Naturally shed the ash longer than flat top bars.

Wiggle out fine ash without increasing spaces between the bars to waste fuel or seriously rupture fuel bed to get it into holes and pockets.

Shake out small rock, slate and clinker by giving lever little longer stroke slipping any size crack between each bar that is necessary.

Dump out all refuse by giving lever full strokes throwing the bars at an angle of 85 degrees.

Eliminating cleaning period, securing increased combustion, the elimination of so much excess air in furnace to do detriment to equipment and waste fuel.

VALLEY IRON WORKS

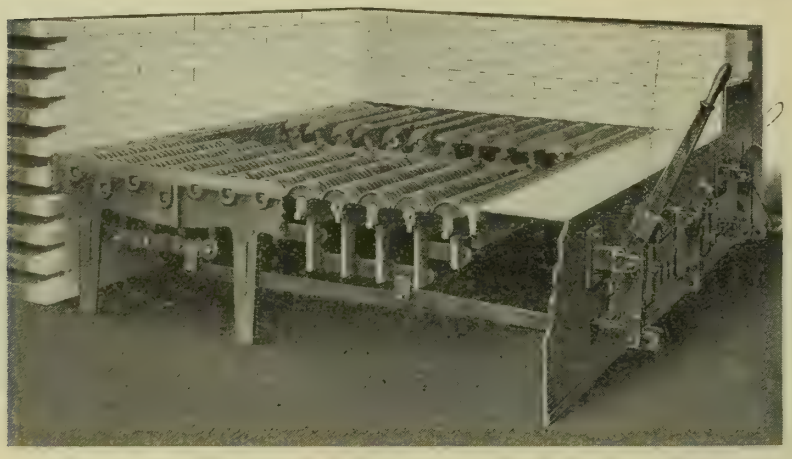
OFFICES AND WORKS
WILLIAMSPORT, PA.

Products

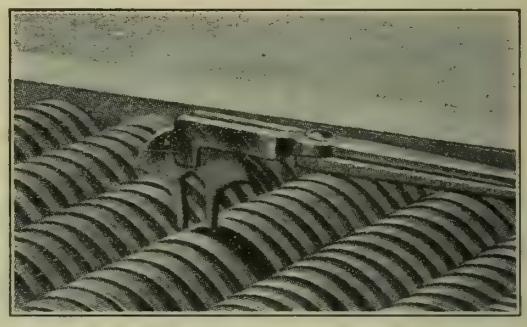
Ajax, Rocking, Shaking and Dumping Grates, Lycoming Steam Engines, and Shafting Appurtenances.

Ajax Grates fulfill all the requirements of a Rocking, Shaking and Dumping Grate, both from the standpoint of combustion and of mechanical construction.

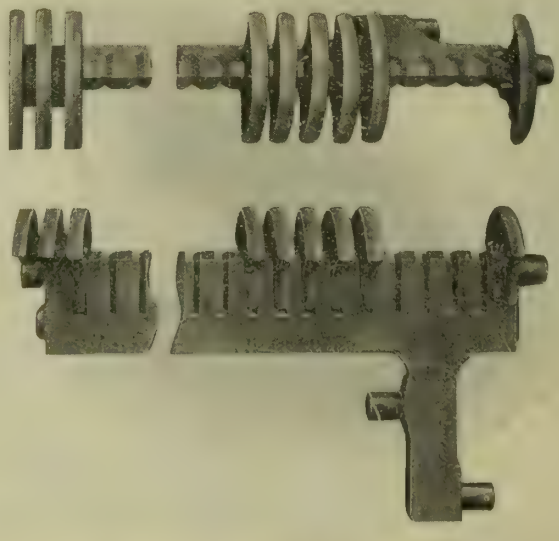
We make the broad claim that an Ajax Grate will develop a higher fuel efficiency in any type of furnace than any other Grate in a similar furnace, and that cost of maintenance will be less than any other of actuating design and construction. To obtain, however, its maximum efficiency, the design of furnace should be as carefully considered as any other portion of steam power plant, for a properly selected Ajax installed in a well designed furnace will not only reduce fuel consumption but enable you to burn successfully a large proportion of the "bone" now thrown away.



Ajax Grates are made heavy enough to insure ample strength at all points, but contain no surplus meterial to make the parts unduly heavy or clumsy. The wearing surfaces of all moving parts are of generous proportions and so constructed that ashes and other gritty substances will not fall upon them. The complete Grate consists of one or more unit sections extending back the depth of furnace, each section being further subdivided into separately operated front and back halves. The first illustration herein represents a Six Section Ajax Shaking Grate for Bituminous Coal, central sections removed and part of cross bars left out to show construction details. Back half of far section thrown to a dumping and clinker-cutting position. The operating lever is shown in position for the grate at rest. The saddles of the Ajax Grate (the only parts touching the fire) are interchangeable and straddle on universal corrugations of the cross bar. Any saddle can be lifted straight up and out and a new one passed into the furnace in about one minute as shown in second illustration, and with no other tools than a pair of tongs, you cannot place them wrong. Moreover, they can be replaced while the boiler is under steam and fire is on the grate, it being necessary only to temporarily brush away the fire over the bad spot. Such repair is seldom necessary as the saddles will last as long as will any type of grate surface.



The Ajax stands on its own legs. It is not tied to boiler walls or front.



Our Catalogue is yours for the asking.

Coppus Engineering & Equipment Company

Main Office and Works

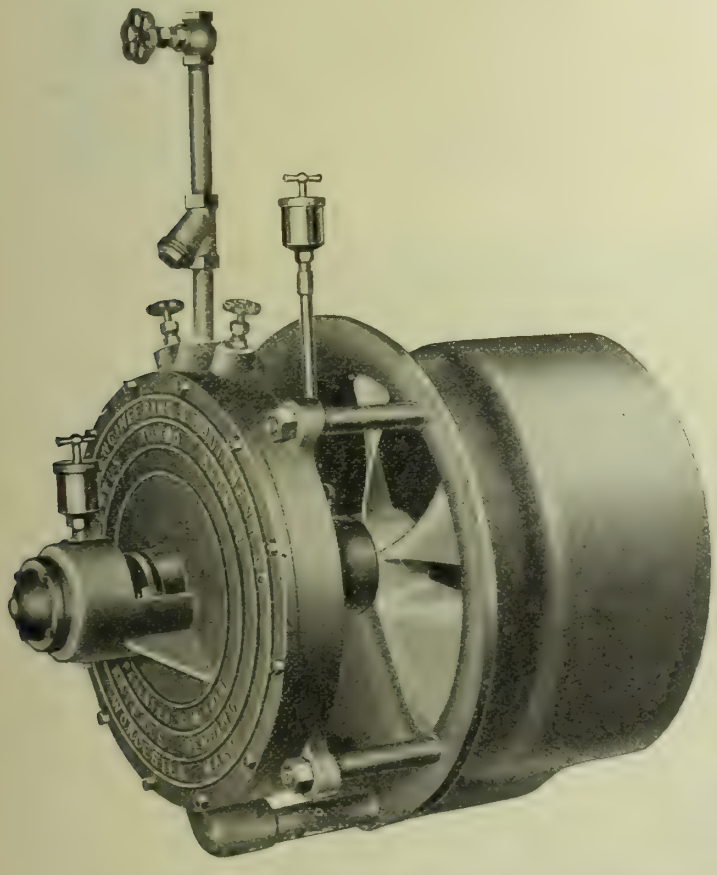
175 Union Street, Worcester Mass.

Manufacturers of

Turbo Blowers, Damper Regulators, Grates, and Steam Turbines.

Coppus Turbo Blowers

To keep up steam is the first requirement in a mine boiler plant. Sometimes it is necessary to burn good saleable coal when refuse coal is available and even then the steam pressure will drop. The Coppus Turbo Blower increases the capacity of boiler from 100 to 200%, keeping the steam pressure constant all the time and not making it necessary to install more boilers and allowing to keep one or more boilers out for repairs and cleaning.



For the burning of the so-called refuse coal, as anthracite dust, soft coal slack, and bone coal, a blower of some sort is necessary. Not every blower, however, will burn these fuels with the same degree of efficiency. The Coppus Blower has been especially designed to meet the specified operating conditions in each individual plant and is not simply adapted for all conditions. For this reason there are several Coppus designs.

We build our blowers with either single or double stage turbine, with different types of exhausts, with outboard or inboard bearings, with straight or expanding fan casings, and equip each size with any one of one-half dozen different fans, whichever is best adapted to the conditions. Where necessary special designs for unusual requirements are furnished. The Coppus is built to stand the "acid test" of actual use. The superior design is backed by expert manufacturing ability. These and the following construction features are the secret of our success and explain why 250,000 boiler H. P. were equipped with Coppus Turbo Blowers in two years.

1.—The Coppus is of the enclosed, separately mounted, large diameter turbine type, which means quiet operation and high economy at the most efficient fan speeds.

2.—The Coppus is the only turbo-blower of this type in which the fan does not overhang the bearing and in which the exhaust steam can be discharged into the fan casing, when so desired.

3.—The Coppus was the first turbo-blower with individual nozzle control in which the steam chamber is sectionalized into small compartments for each nozzle and does not extend clear around the priphery of the casing. It was the first to use ball bearings and in the Type B it was the first to use an outboard bearing for the turbine. These and several other original Coppus features are now being widely imitated.

4.—The Coppus Turbo Blower—size for size—delivers more air at any specified pressure and uses from 25% to 75% less steam than any other turbo blower made. We will be glad to back up this statement by a comparative test. The Coppus has replaced a great many other blowers, but no other blower has ever replaced a Coppus.

The Coppus used the expanding casing as early as 1912, and patent for same has been applied for, but so far no patent has yet been granted on an expanding casing to us or anybody else.

Coppus Damper Regulator

The Coppus Damper Regulator is used to operate the Coppus Turbo Blower automatically through means of a balanced valve and is a guarantee for constant steam pressure, as it takes the regulation of the blower out of the hands of the fireman.

Damper Regulators have been used for a large number of years and the Coppus Damper Regulator has been patterned after the type which has given the best satisfaction and which allows the widest range of adjustment. It enjoys the distinction of being built in our own shop, equipped with the most up-to-date machine tools, and therefore insures the highest degree of workmanship.

Coppus Grates

The Coppus grate has been especially designed for the burning of low grade fuel. On account of its operating features it stands absolutely in a class by itself and is entirely different from any other grate. Without making any change in the brate bar whatsoever its air space may be changed by the mere operation of a lever from nothing to 50%. This is, the grate can be closed entirely and operated at 5%, 10%, 20%, 50% air space or any intermediate position to suit the requirements of the fuel.

Two or three years ago a large mining concern in Pennsylvania spent several thousand dollars in experiments to determine the air space best adapted to their refuse coal (anthracite dust). If the Coppus Grate had been on the market at that time this would have been a simple matter and the cost would have been merely nominal, as a single grate under one boiler would have told the whole story and a great deal more accurately, as the other boiler conditions would have remained the same.

Where with other grates several cleanings a day are necessary, the Coppus Grate is operated a whole week without the fires being cleaned. One of the most remarkable features of the grates is the manner in which the ashes are removed without the loss of any coal and small clinkers are ground up without the waste of any fuel. That the Coppus Grate fills a long felt want is emphazised by the fact that we were swamped with orders before we had anything to show in the form of a catologue or a model and every installation has borne out the good judgment of the purchaser.

Full information will be gladly sent upon request.

Combustion Engineering Corporation

New York City
11 Broadway

Philadelphia, Pa.
The Bourse

Pittsburgh, Pa.
Geo. J. Hagan Co.

Chicago
Fisher Bldg.

Salt Lake City
American Stoker Co.

Hazelton, Pa.
Markle Bank Bldg.

Owners and Manufacturers of

Type "E" Stoker---For Bituminous Coal The Grieve Grate---For all Hand Fired Fuels.

Sole Representatives

Coxe Traveling Grate Co---The Automatic Anthracite Stoker.

Products

Type "E" underfeed stokers for bituminous coals.

Coxe stokers for anthracite coal.

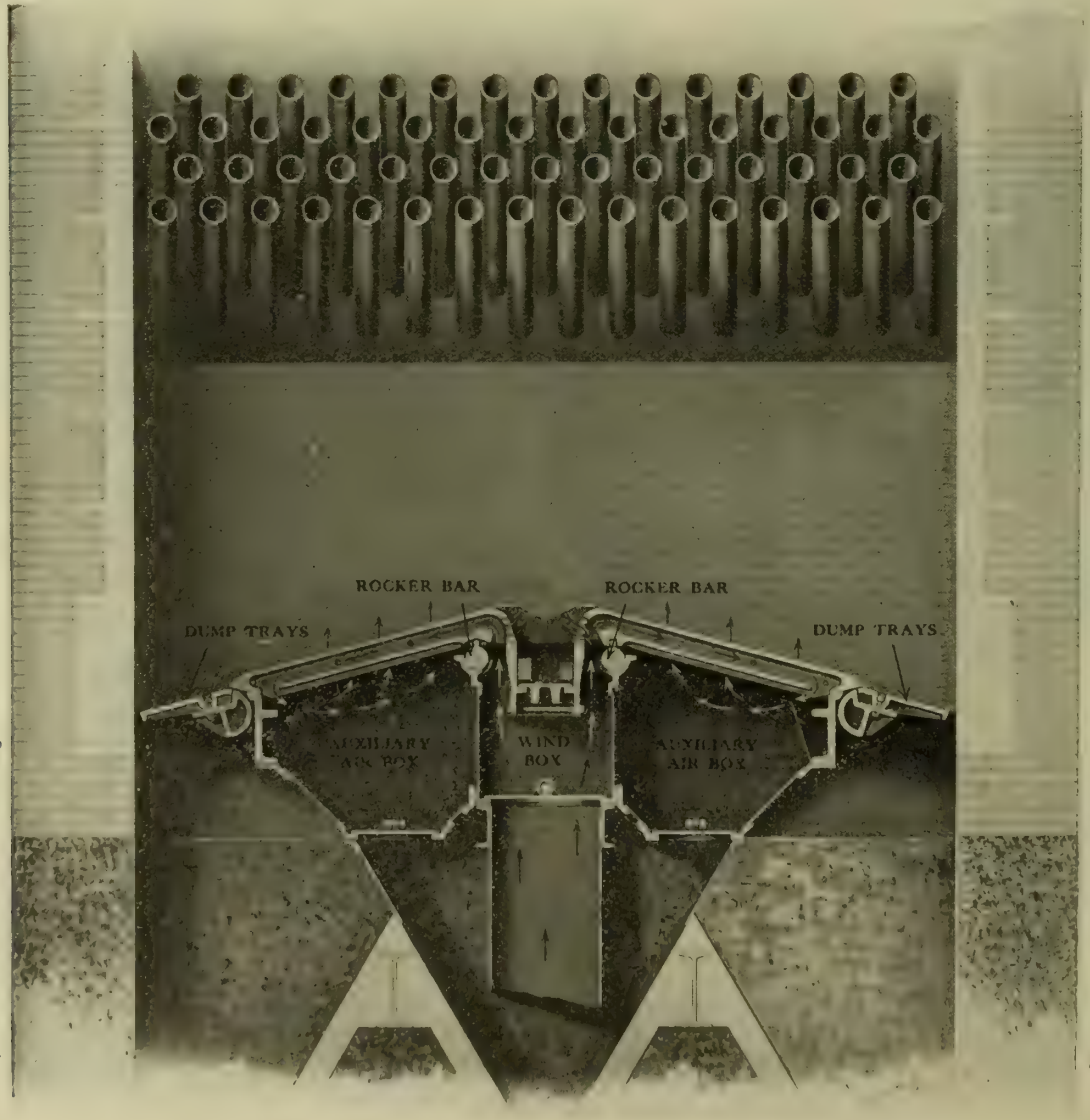
Grieve grates—Shaking, dumping and stationary.

Type "H" stokers for heating furnaces.

Type "E" Stokers.

Especially designed for economical combustion of bituminous and semi-bituminous coal, including refuse from bituminous mines.

The Type "E" stoker is the result of several years' development and improvement on the earlier underfeed stokers. It has been for the past eight years, and is now, in successful use throughout the world, burning coals of more widely varying char-



acter than any other stoker on the market, ranging from lignite or brown coal to semi-anthracite.

Description of the Type "E" Stoker

In this stoker the coal is fed by hand labor or coal conveying machinery into a large hopper, and conveyed under the fire by means of the reciprocating sliding bottom of a feed trough or retort which runs the full length of the stoker. The coal is delivered uniformly from front to rear by auxilary pushers, and as it rises in the trough is distributed to the sides of the furnace by means of the moving bars. The burning fuel is constantly carried by the action of these bars to the dumping trays along each side wall where the resulting ash or clinker is deposited. These trays are dumped by a single motion of the dump lever on the outside of the furnace.

The movement of the fire bars in addition to carrying the burning fuel to the sides of the furnace also conveys the clinker and ash down and onto the dump trays. As the motion of fire bars at the outward end is slightly up and down, any clinker present is kept from forming in large pieces. Therefore, no difficulty is experienced in dumping as it is not necessary to remove large masses of clinker with slice bars.

Distribution of Air

Air for supporting combustion is supplied by a volume blower or fan connected to the stoker wind box by a pipe or duct. One of the important features of this stoker is the distribution of the air, all of which enters the stoker through the opening in the bottom of the wind box.

After entering the wind box the air passes upward along each side of the retort and is discharged partly through the tuyere openings in the inside or retort end of the fire bars; the remaining air passes through the hollow fire bars, which are of box-like cross section, and is discharged into the auxiliary air boxes. From these chambers the air enters the fire through openings between the fire bars.

The function of the fan in the Type "E" stoker installation is to furnish the required volume of air at a pressure sufficient to overcome the resistance of its passage through the tuyeres, hollow grate bars and fuel bed, beyond which point it is the function of the chimney—the natural draft—to draw the products of combustion through the boiler with sufficient rapidity to maintain the conditions necessary for the economical operation of the boilers and furnaces.

Adaptability

The fact that the Type "E" stoker is in use throughout Europe, South America and in the United States, burning coking or non-coking coal ranging from ten to forty per cent volatile matter, and five to thirty per cent ash, and under all types of stationary boilers is sufficient proof of its adaptability.

Installation

The Type "E" stoker may readily be applied to existing hand fired boilers with but little change in boiler settings. Hopper ash pits, though desirable, are not necessary. Deep ash pits are not required as ashes may be removed from boiler room floor level. The stoker, therefore, may be installed under boilers where other types of stokers would be impracticable on account of the cost of providing deep pits.

Sizes

We are prepared to furnish stokers to fit practically any conditions. Our sizes range from 36 to 115 sq. ft. of grate surface in single units, furnaces of extreme width can be fitted with two or more stokers.

Adaptable to present boiler settings and can be installed with slight changes only.

Prices and bulletins on request.

Coxe Stokers

This machine is designed and built to burn economically the small sizes of anthracite coals, including mixtures of barley and silt and refuse banks in the anthracite region. Boilers can be operated at from 150 to 225 per cent of their rated capacity. This machine is also adapted for the burning of Coke Braize at high ratings.

This machine enables anthracite mines and coke properties to utilize their refuse material and release for market large quantities of marketable product, which they are now using in their own consumption to produce power.

These machines are made in varying widths from 5 to 10 ft. and lengths to give the proper grate area for the kind of fuel to be burned and rating required.

Substantially built, simple in operation and but little labor required to operate.

Send for prices and particulars.

Grieve Grates

Forced draft and natural draft grates, giving the most equal and even distribution of air throughout the entire bed of fuel. For hand-fired situations it is easily operated, and owing to its construction there is practically no loss of fuel into the ash pit.

Made in dumping, shaking and stationary types.

Prices and description forwarded upon request.

Type "H" Stokers

This type of stoker is exclusively used in connection with metal work. In its application to metal heating furnaces, annealing ovens, core ovens, dryers, evaporators, etc., it has been found to be most successful.

THE KINCAID STOKER CO.

511 East Pearl Street, Cincinnati, O.

Manufacturers of

Stationary, Locomotive and Marine Stokers



Kincaid Stationary Stoker

Don't burn good coal.

Save money by burning your **fine screenings, machine cuttings** and **mine waste** under your boilers with a **Kincaid Stoker.**

This stoker can be installed on any furnace in the space you now have in your boiler room, in a very short time. It is **not** neccessary to reconstruct your boiler setting, ash pits or grates.

It requires **no** special setting, combustion arches tuyer blocks, or forced draught system which are costly to maintain.

It will fire on your **present** grates. Moving grates or plungers under the fire are quick to burn off and "puddle" the fire into large clinkers.

It maintains maximum boiler pressure without the boiler blowing off, takes care of variations of load automatically, and will **increase** your **boiler capacity,** permitting you to force your boiler beyond all possibilities of hand firing.

With it you will attain perfect and smokeless combustion of **low grade** fuel.

It will fire run-of-mine as well as slack; anthracite, as well as bituminous.

With it inexperienced men can fire your boilers with the greatest efficiency, and at the same time the work of the fireman will be considerably lighter.

The extreme simplicity and durability of this stoker mean a very **low cost of maintenance.**

It is not an automatic furnace. It is a truly automatic, mechanical fireman.

Description

The Kincaid Stoker is mounted on the furnace so that it may be swung entirely away from the fire door opening, giving free access to the fire box for any purpose.

Coal is delivered into the fire box in approximately 6 oz. charges. Each charge is spread entirely over one quarter of the grate, the first charge over the quarter nearest the bridge wall, the second over the adjacent quarter, the third over the next, and the fourth over the quarter nearest the door.

Then a new cycle is automatically started, delivering the fifth charge over the quarter nearest the bridge wall, and so on, building up a very even, porous and spongy fire over the entire grate, through which air passes easily and evenly.

The coal being spread in this manner, the volatile gases are distilled in small quantities over every portion of the grate, and there is a perfect combination of these gases and air.

The high temperature of the fire box ignites the gases and small particles of carbon, and they burn before they have a chance to escape in the form of black smoke. This results in perfect and thorough combustion, which is the only economical way to have a smokeless stack.

The Kincaid Stoker has an automatic valve which is operated by a variation of steam pressure on the boiler, which controls the amount of coal placed in the fire box **automatically.** This assures maximum steam pressure without the boiler continually blowing off, and without burning an excess of coal.

This attachment is very sensitive and takes care of variations in load without any attention on the part of the fireman.

Consult our Engineering Department about your combustion problems.

Write for bulletin "Fire Light and Often."



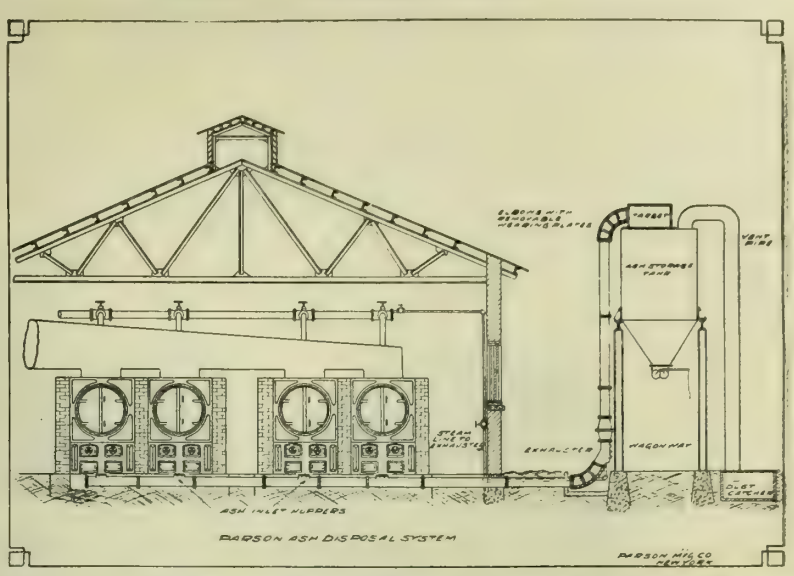
PARSON MANUFACTURING CO.

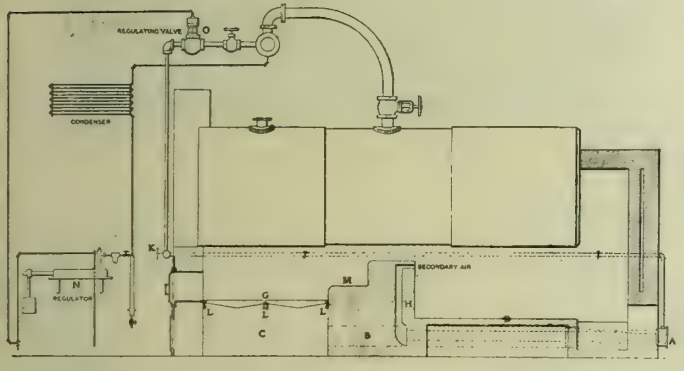
Manufacturers of **Boiler Furnace Equipment** Land and Marine

95 LIBERTY ST. NEW YORK CITY

Pneumatic Ash Ejector

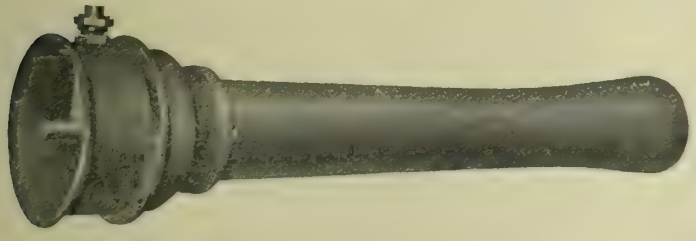
Parson Pneumatic Ash Ejector has no moving parts. Removes ash quickly and economically. Will deliver to car or ash tank at least six tons per hour. Tank not required; ash can be discharged to dump.





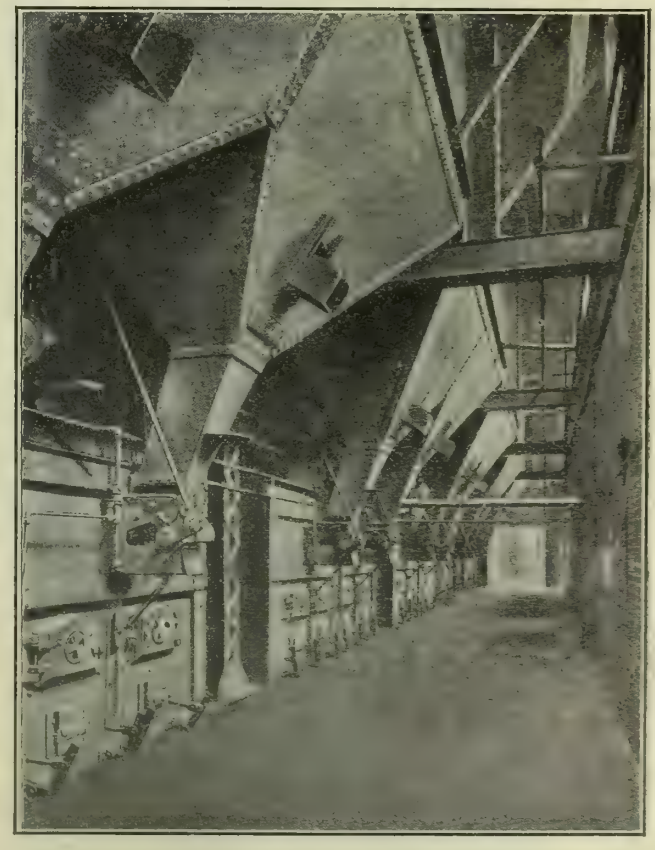
The PARSON SYSTEM, hand fired or distributor fired, utilizes perfectly all kinds of fuel—especially effective in utilization of low-grade fuels, small size anthracite, culm, bituminous slack, coke braize or **any material containing carbon.**

The PARSON SYSTEM has special Parson Hot Blast Injector Blower, Parson Patented Non-Warping Grates, Stationary or Dumping, and Automatic Regulation, adaptable to any type of boiler.



Parson Blower

Also
Parson Oil Burners.
Parson Tube Cleaners.
Parson Gas Burners.
Parson Cooper Stoves—burn oil.
Parson Ash Spray, for wetting down ash.



W. J. Rainey, Mount Braddock Plant, Connellsville District.
370 Coke Ovens. 5 300 H. P. Erie City Boilers.
Boiler House Equipment—Parson System, Dumping Grates and Fuel Distributor. Fuel—Coke Braize and Bony Coal.
Interior View of Boiler House.

Parson Fuel Distributor

This cut shows an ideal installation at the works of W. J. Rainey, Mt. Braddock, Pa. Distributes fuel evenly over whole grate. Each machine will take care of a grate 7 feet wide and 10 feet deep. No hand firing required.

PITTSBURGH FILTER MANUFACTURING CO.

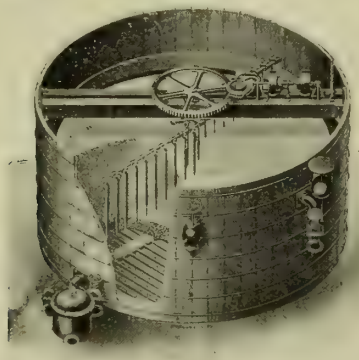
GENERAL OFFICE, PITTSBURGH, PA.

Branch Offices, Kansas City, Mo.

Pressure and Gravity Filters, Water Softening Plants

Description of Pittsburgh Gravity Filters

These filters are built in sizes from five to twenty feet in diameter, when built of wood, or constructed of steel, but are usually built of rectangular shape when constructed of concrete. They are most suitable for small cities, hospitals, public institutions, paper mills or other industrial purposes where considerable quantities of water are required.



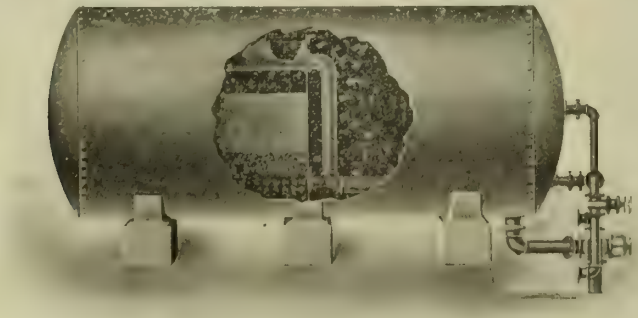
Gravity Filter.

They are equipped with the best type of gate valves, controlling the inlet, outlet, and wash-water supply. The inlet is supplied with a controlling float valve to regulate the supply to filter, and the outlet controlled by an automatic rate controller when required.

We build these filters equipped with the standard rake agitator operated by gears and belts or with our system of air agitation as may be most convenient or desirable. With our system of air-wash the air may be used at the same time as the wash-water or independently, as desired.

We build this filter in the belief that it is the most perfect in design and construction, simplest in operation, most efficient in results of any of its type on the market.

Prices on application.



Pressure Filter.



Intermittent Water Softener.

Types of Plant

We build several different types and designs of plants, each having their peculiar points of advantage for certain conditions. Our long and varied experience enables us to design plants to meet any peculiar local conditions, embracing such features as will give the most satisfactory results at the least cost for installation and operation.

We build both the Intermittent and Continuous Process plants, for either hot or cold water, of steel, wood, or concrete construction, of any capacity required from a few thousand gallons daily capacity to millions of gallons.

Our plants are designed with a view of combining the very highest efficiency with the greatest simplicity in care and operation. Our capacities are generous, providing ample elasticity and the construction of the best type of material and workmanship of their respective kinds.

If you desire a plant for Railroad Water Station use, industrial or municipal purposes, do not fail to consult us. We will make analysis of your water and recommend the type of plant best suited to your needs.

Concrete now so generally used in the construction of municipal plants is becoming more and more the standard of permanent construction.

We are prepared to design and construct both the intermittent and continuous type of plant in concrete.

We build but one kind—The Best.

THE SIMS COMPANY

Manufacturers of Power Plant Appliances

ERIE, PA.

Branch Offices and Agencies

Guy L. Andrews, 1215 Loraine St., Pittsburgh, Pa.
Huntington Supply & Equipment Co., Huntington, W. Va.
B. W. Thurtell, 22 Quincy St., Chicago, Ill.
E. S. Pleasanton, Weightman Bldg., Philadelphia, Pa.
P. A. Moulton, Room No. 754 Marbridge Bldg., New York City.
Mine & Smelter Supply Co., Denver, Colo.
Henry M. Fife, 1111 Holland Bldg., St. Louis, Mo.
Earl F. Scott, Candler Bldg., Atlanta, Ga.
Moore-Handley Hardware Co., Birmingham, Ala.

Products

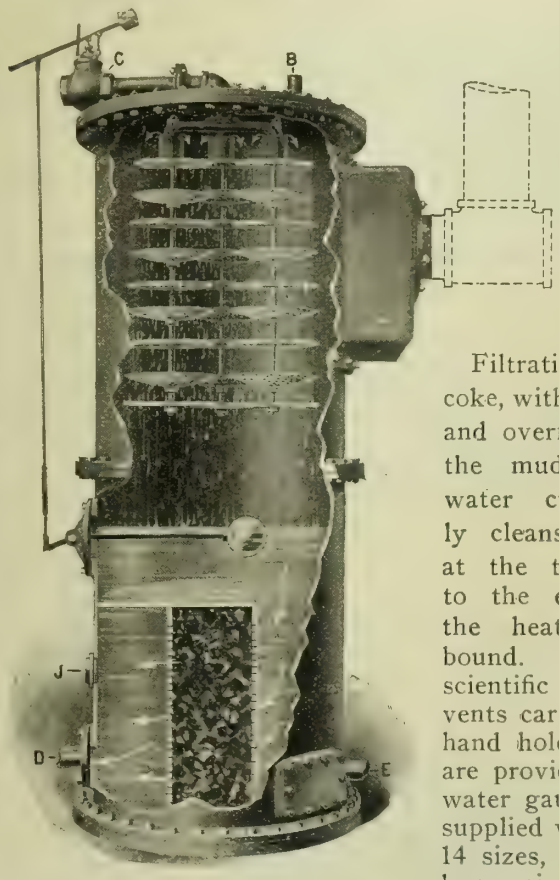
Feed-Water Heaters, Steam Separators, Exhaust Heads, Oil Filters, Etc.

Feed-Water Heating

The value of a feed water heater as a fuel and boiler saver need no longer be argued. Every 11 degrees of heat saved by using exhaust steam represents a saving of 1 per cent of fuel, or the increase of boiler capacity to the same extent. Large increase in the life of the boiler and large reduction in repairs are secured at the same time by prevention of strains from expansion and contraction.

Two types of feed-water heaters—the "Open" and "Closed"—are generally known. We manufacture both types. The kind to be used in any particular steam plant must be determined by local conditions. Design and construction of our heaters are the outcome of many years' experience in the manufacture of steam appliances. The most exacting and scientific engineers will recognize them as thoroughly up-to-date, representing the highest type of engineering and manufacture—the product of the best material, the latest tools, and the most skilled workmen. Our works are situated at a good distributing point, assuring the most favorable rates of freight.

The illustration shown herewith is the type recommended for mining installations on account of its taking care of the impurities in the water.



Sims Open Feed-Water Heater Filter and Purifier

Renders the additional service of removing earthy matter, carbonate of lime, and similar impurities. Made round, to resist accidental or occasional back pressure; of cast-iron, which is not subject to corrosion; with every part accessible for cleaning. Perforated saucers suspended from bolt hooks give excellent distribution of the water, either through the perforations or in a thin veil around the edge, thus enabling the water to absorb every possible unit of heat from the incoming steam.

Filtration is cross-current through coke, with automatic float regulation and overflow trap. Blowing down the mud chamber reverses the water current and automatically cleans the filter. A vent pipe at the top may be carried back to the exhaust or elsewhere so the heater cannot become air-bound. An oil separator of scientific construction entirely prevents carrying over any grease. A hand hole and blow-off connection are provided in the mud chamber; water gauge and thermometer are supplied with each heater. Listed in 14 sizes, 50 to 4,000 horse power, larger sizes as may be required.

KENTUCKY.

E. V. Consolidated Coal Co., One No. 5A. Open. Elk Valley
Kimberly Coal Co., One No. 3A. Open, ... Kronos
Pioneer Coal Co., One No. 14 Closed, ... Pineville
Rockport Coal Co., One No. 12 Closed, ... Rockport
Torchlight Coal Mining Co., One No. 10 Closed, Torchlight

PENNSYLVANIA.

Greenwich Coal & Coke Co., One No. 17 Closed Greensburg
Greenwich Coal & Coke Co., One No. 17 Closed Shanktown
United Ice & Coal Co., One No. 14 Closed ....Harrisburg
Clinton Coal & Ice Co., One No. 5 Closed .... Lockhaven
Lincoln Coal Co., One 450 H. P. Closed ..... Nanty-Glo
N. Y. & Cleve. Gas Coal Co., One 1800 H. P. Closed Export

WEST VIRGINIA.

Bengal Coal Co., One No. 8A. Open, ... Accoville
Roanoke Coal & Coke Co., One No. 7-A. Open, ..Ashland
Middle States Coal & Coke Co., One No. 10 By-pass Carswell
Ethel Coal Co., One No. 9-C. Open, ... Ethel
E. L. Sternberger Coal Co., One No. 5-A. Open, Goodman
Panther Coal Co., One 400 H. P. A. Open, ... McDowell
Hines Coal & Lumber Co., One 3-C. Open .... Princeton

CRESSON-MORRIS COMPANY

Philadelphia, Pa.

High Grade Steam Condensing Equipment

Air Pumps Water Pumps

Beyer Barometric Counter-Current Condensers

Beyer Barometric Condensers.

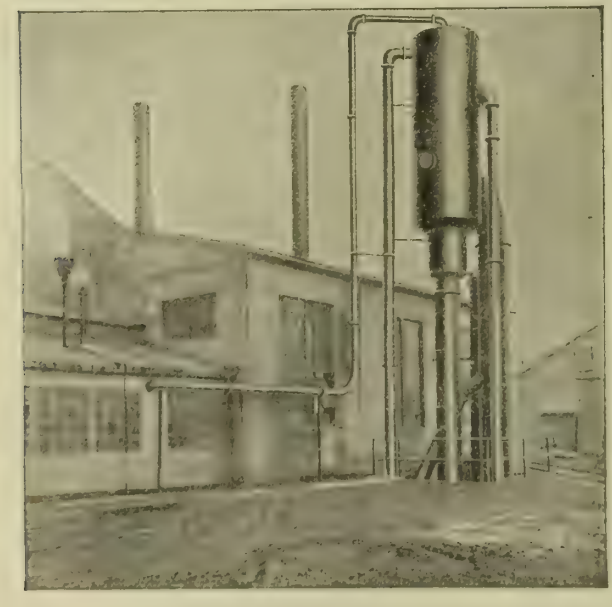
The Beyer Barometric Condenser is of the Counter-Current design possessing features of advantage not to be had in any other type. These features, some of them patented, are in large degree responsible for the superior performance and reliability of the Beyer Condenser.

There are a great many in constant daily service in various industries and in all cases the reports indicate that the confidence placed in the Beyer Condenser by its purchasers has been more than justified.

Distinctive Features.

Simple interior construction of Condenser Head.

Nothing but cast iron exposed to action of cooling water.



No nozzles, springs or contracted passages employed whatever.

Close operating temperatures between exhaust steam and hot well.

Impossible to flood main units or auxiliaries.

The above are obtained by handling the air and water separately, and allowing the hot waste water to drain off from condenser head. The latter obviates the defect incident to the use of water pumps for pulling the waste water from condenser head, at the barometric elevations generally encountered in mine work.

This defect is the decreased suction lift of any kind of water pump, with the temperature of water resulting in summer-time, at elevations above sea level. Where the water drains off due to gravity, a higher vacuum can be maintained under the same conditions. As a result the apparatus is—

Safe.

Reliable

Simple to operate.

Cheap to maintain.

Adapted to elevations above sea level.

Air Pump.

The air pump handles nothing but dry air. This permits cooling water of high temperature to be employed, 120° and higher being easily used. The pump has no operating valve gear on air cylinder, requires little oil and minimum of attendance.

Correspondence is invited from those contemplating installing condensers where

Water available is scarce.

Water is hot.

Water is acid or contains much foreign matter.

BALL ENGINE COMPANY

ERIE PENNA.

Builders of

High-Grade Steam Engines

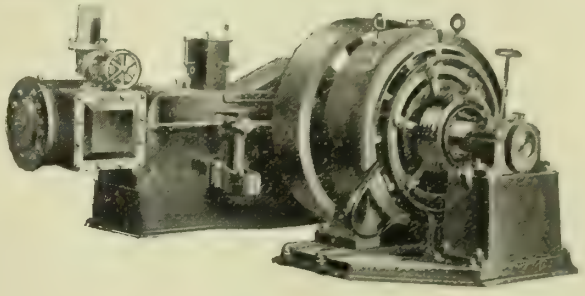
Pittsburgh, Representatives:

DRAVO-DOYLE COMPANY

Pittsburgh, Cleveland, Indianapolis, Philadelphia.

Products

Single Cylinder, tandem compound, and cross compound Single Valve automatic engines from 50 to 700 H. P. and non-releasing gear Corliss engines of the high speed type, single cylinder and cross compound from 125 to 1,200 H. P.



General

The Ball Engine has been recognized for many years as a standard for any work requiring an efficient and reliable power unit. Excellent design and construction have helped to build up a record of service unexcelled by any other similar machine. Hundreds of these engines are in daily operation in the coal industry, where the importance of reliability is keenly felt, and where the Ball Quality of service is heartily appreciated.

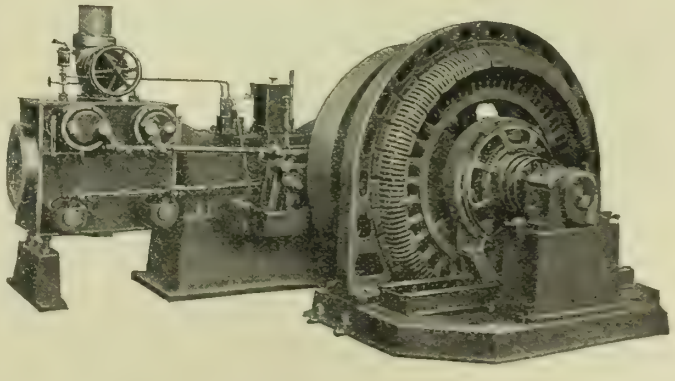
The Single Valve type of engine is extremely simple in construction, and, of course, lower in first cost than the Corliss type. It is largely used where simplicity of operation and low first cost are more important than low steam economy.

Construction

The Side Crank construction has been adopted because of its superior adaptation to conditions met in service. This construction eliminates the necessity for three bearings in engines direct connected to generators, and avoids thee undesirable feature of an overhanging wheel which is particularly objectionable in the case of belt drives and in alternating current work.

The various details are substantial in design and material, and simple adjustments are provided wherever necessary.

The oiling system furnishes a reliable means of supplying oil to the bearings in any quantity desired. Adjustable sight feeds are provided for each bearing, and these are fed from a filter tank mounted on the top of the frame. A valveless pump of a special type which cannot be choked by waste or foreign substances, automatically pumps the used oil from the crank pit into the filter tank.



The Ball non-releasing gear Corliss Engine was introduced more than ten years ago, and is firmly established as an engine of exceptional economy and reliability. Its smooth operation, close regulation, and its characteristic faculty of "sticking to the job" have built up a considerable demand for this type in the coal field, as well as in many other industries where the service requirements are exacting.

RIDGWAY DYNAMO & ENGINE CO.

BUILDERS OF

POWER PLANT EQUIPMENT

MAIN OFFICE AND WORKS

RIDGWAY, PENNSYLVANIA

Branch Offices and Agencies:—

Boston, 53 State St.
New York, 38 West 32nd St.
Philadelphia, Real Estate Trust Bldg.
Wilkes-Barre, Second National Bank Bldg.
Washington, Colorado Bldg.
Atlanta, Walton Bldg.
Pittsburgh, Oliver Bldg.
Cleveland, Schofield Bldg.
Chicago, Marquette Bldg.
St. Louis, Chemical Bldg.
Denver, Boston Bldg.
St. Paul, Dwyer-Field Co., Endicott Arcade.
Seattle, Hallidie Machinery Co.
San Francisco, N. E. Otterson, 71 First St.
Dallas, A. G. Wright, Slaughter Bldg.
New Orleans, Electrical Appliance Co.

Products

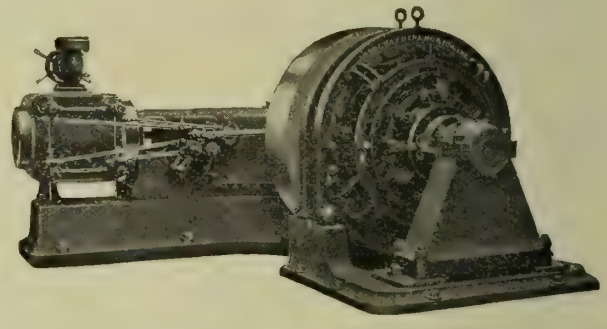
Steam Engines (Horizontal), Single-Valve Type, Side and Center Crank; Four-Valve Type, Side Crank; All Engines Built Simple, Tandem or Cross Compound. Generators, Direct and Alternating Current Types, Belted, Direct Connected, and Coupled. Motor-Generators, Boosters, and Balancers. Steam Turbines (Horizontal) High, Low, and Mixed Pressure with Direct and Alternating Current Generators and Blowers.

General

Ridgway Power Plant Equipment is recognized as a standard for Mining Work. This is due to several reasons, among which are 20 years' experience in building such equipment, a complete line of standard Engine-Generator Units especially designed for that work, and an organization of engineers and salesmen which is constantly looking out for the best interests of the user, even after the equipment has been accepted and paid for. Since the complete unit is the product of a single factory, there is no divided responsibility with its attendant troubles.

Engines

Ridgway Side Crank Engines, Single and Four-Valve Types, are fully enclosed and splash oiling. The main bearings are quarter boxes with wedge adjustment. The connecting rods have solid ends with phosphor bronze boxes, babbitt lined on the crank end. The cross head bodies are made of cast steel with babbitt faced shoes. The governor is of the centrifugal-inertia type and represents the highest development of the shaft governor.

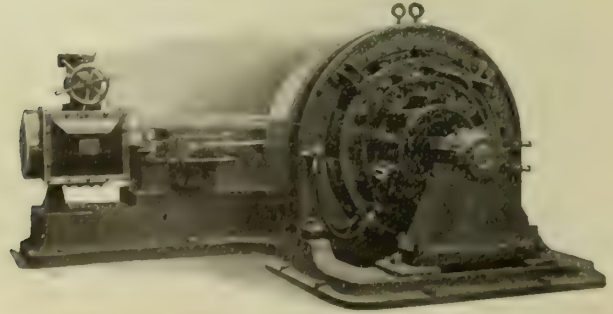


Four-Valve Engine, Direct Current Generator.

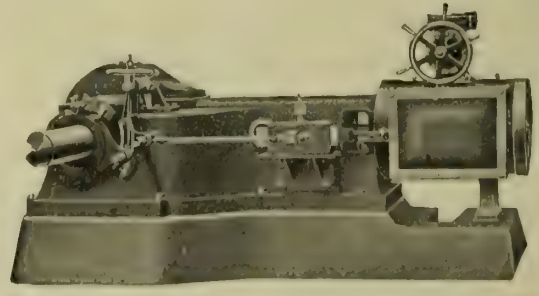
Single-Valve Engines have a flat balanced valve with double admission and exhaust edges.

Four-Valve Engines have semi-rotary, semi-balanced, double-ported valves. The valve gear is extremely simple and the principal moving parts run in oil. The motion of the valves is the same as on Corliss engines with the resulting high economy, augmented by careful design and workmanship. This engine has a distinct place in mining operations, where high economy and simplicity are desirable.

Engines of all types are built for belted, direct connected and coupled service. A special line has been developed for driving mine fans, pumps and similar service. These engines are fitted with an adjustable cut-off gear controlled by hand, fly-ball governor, or pressure cylinder. With any of these engines the speed may be adjusted at any time, and with the fly-ball governor the Engine will maintain its speed under varying load or steam pressure.



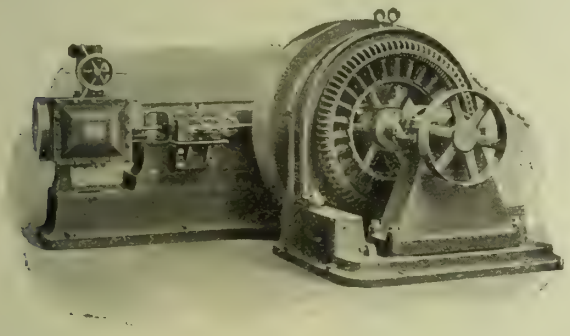
Single-Valve Engine, Direct Current Generator.



Fan Engine with Hand Adjustable Cut-off Gear.

Direct Current Generators

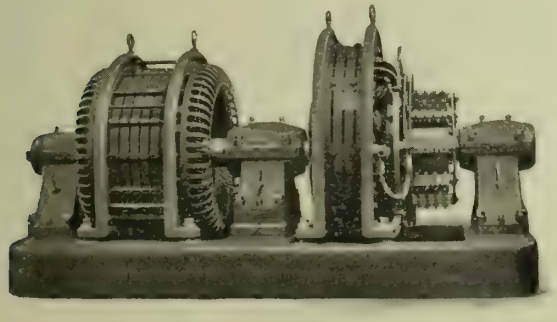
Ridgway Direct Current Generators are provided with a compensating field winding, making them capable of handling the most extreme overloads without sparking. For mining work where load fluctuations are severe and sudden they are without an equal. The field is of laminated construction throughout and responds almost instantly to changes in the magnetizing current. This feature means better regulation than is possible with a cast iron or cast steel field. Three-wire generators are built from the two-wire designs with but slight changes in the connections.



Single-Valve Engine, Alternating Current Generator.

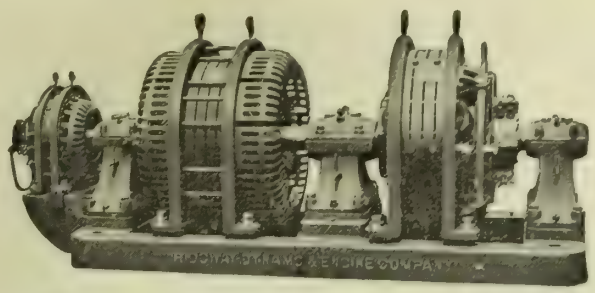
Alternating Current Generators

Ridgway Alternating Current Generators are built according to the latest ideas for such machinery. All sizes are built with revolving fields, having strip wound field coils on the large machines and wire wound coils on the small. The armature core is clamped between heavy cast iron rings in such a way as to leave the core exposed, thereby securing the maximum ventilating effect. Alternators are wound



Induction Motor-Generator Set.

single, two and three phase, for 25 or 60 cycles, and for the usual standard voltages. The line covers direct connected, belted, and coupled or water wheel type machines.



Synchronous Motor-Generator Set with Exciter.

Motor-Generators

The increasing use of central station power in mining and other operations has created a demand for motor-generator sets of various characteristics, and especially for transforming alternating to direct current.

Ridgway Direct and Alternating Current Generators combined into Motor-Generators possess all of the good features of the separate machines, and make a set having the highest possible efficiency and the most satisfactory operating performance. Combinations can be made of self-starting synchronous motors with or without separate exciters, induction motors, direct current two and three-wire generators, series boosters and direct current motors. Sets with synchronous motors can be arranged to operate with either end acting as the motor.



Turbo-Generator Sets

Ridgway-Rateau-Smoot Turbines with Ridgway Direct and Alternating Current Generators embody the latest improvements in the design of such machinery.

Particularly successful in mining plants, and where an increased power output, with no increase in boiler equipment, is desired. High, low and mixed pressure types. 250 K. W. to 3000 K. W.

Sizes

Simple Engines, Single Valve:—15 H. P. to 1000 H. P.

Simple Engines, Four-Valve:—75 H. P. to 1000 H. P.

Cross Compound Engines, Single or Four-Valve:—125 H. P. to 1500 H. P.

Tandem Compound Engines, Single or Four-Valve:—100 H. P. to 750 H. P.

Direct Current Generators, Engine Type:—10 K. W. to 750 K. W.

Direct Current Generators, Belted Type:—3 K. W. to 750 K. W.

Motor-Generator Sets, All Combinations:—5 K. W. to 1000 K. W.

GENERAL ELECTRIC COMPANY

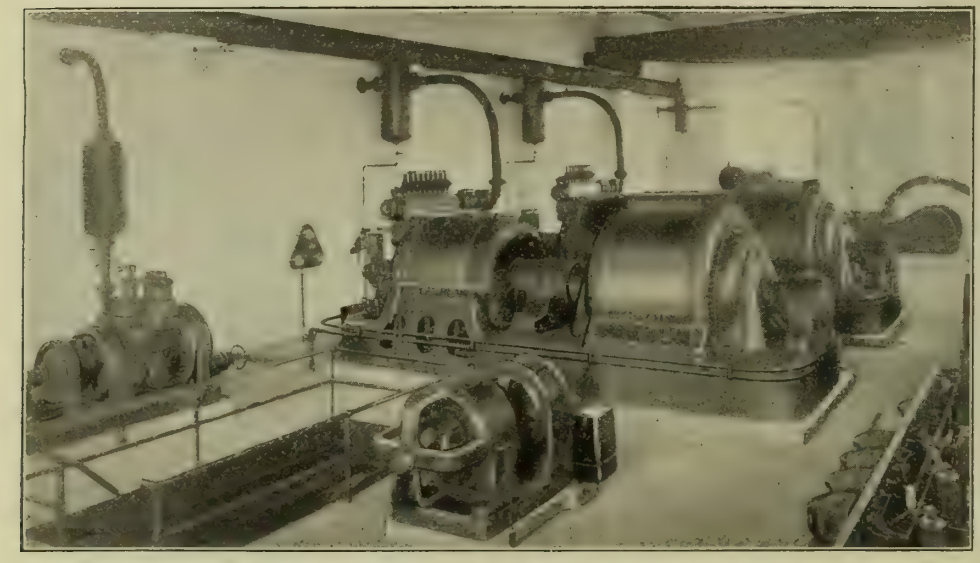
General Offices: Schenectady, N. Y.

The Guarantee on Goods of Excellence Electrical

Sales Offices In All Large Cities

ELECTRICAL EQUIPMENT FOR MINES

The engineers of the General Electric Company have been designing and supplying special electrical apparatus for mine use during the last quarter century. The data and experience from many thousand mine installations, all over the world, is available to our designers of special electrical apparatus for mine use including steam turbines, generators, transformers, switchboards, motors and control equipment, motor generator sets, rotary converters, electric mining locomotives of every type and combination of types desired, portable mine air compressors, etc., etc.



3000 kw. Curtis Steam Turbines, Rochester and Pittsburg Coal and Iron Co. Punxsutawney, Pa.

The Curtis turbine is made in all sizes from a few kilowatt capacity, up to the largest in existence. It is not only more economical than other types, but its high economy is maintained over wide variations in load.

Aside from the resulting saving in coal, less load is imposed on the boiler plant, and in many cases an appreciable saving in cost of coal handling and firing has been effected. That this feature is generally understood and appreciated by mining companies is shown by the very large number of Curtis Turbines employed in this class of service.

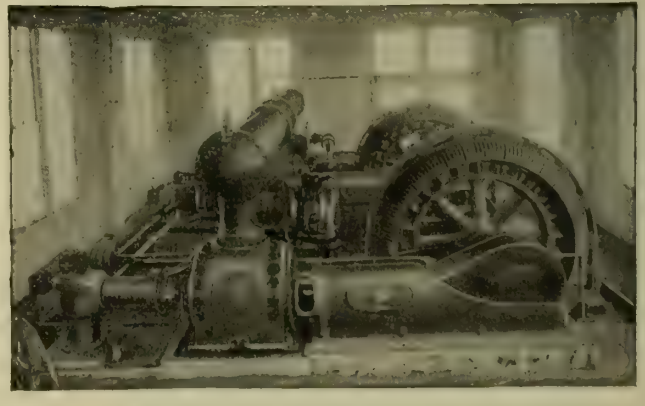
The Curtis Turbine is designed throughout with an extremely liberal factor of safety; constructed of the very best material, correctly proportioned for the service required. The stresses to be met are determined with absolute exactness. The selection of material to be used is governed not only by the results of long experience, but by constant and rigorous tests. The complete Curtis Turbine is, therefore, as nearly perfect mechanically as it is possible to build. As a result, power supplied by Curtis Turbines is seldom interrupted by shut downs, and operators are assured of constant operation of motors, hoists and other electrically driven apparatus.

Geared turbines are available in a considerable range of sizes, adaptable to direct current generators, or other apparatus which runs at lower speed than the most efficient turbine speed. The gear is simple in construction, and its initial high efficiency is maintained in service.

A number of small turbines are available, particularly designed for direct mechanical drive, that is, for connection to pumps, blowers, etc., for which class of work the small and compact design and few parts render them particularly suitable.

The electric end of Curtis Turbine sets consists of a generator embodying the superior features characteristic of all G-E generators, combined with a mechanical design particularly adapted to the turbine which drives it.

The extreme operating temperatures of the generators, are all well within the limits which insulation will satisfactorily withstand. This assures ample margin for unusual or extraordinary conditions, as well as long life for insulation.



2650 Cu. Ft. (At 100 Lb.) Air Compressors, Driven by 450 kv-a., 6000 Volt Synchronous Motors, Buffalo, Rochester and Pittsburg Coal and Iron Co., Punxsutawney, Pa.

Synchronous motors are furnished for driving air compressors and improving the power factor of mine transmission lines having a large induction motor load.

The General Electric Company transformers furnished for mine use are stanchly made and capable of withstanding rough treatment in transportation as well as severe service operating conditions.

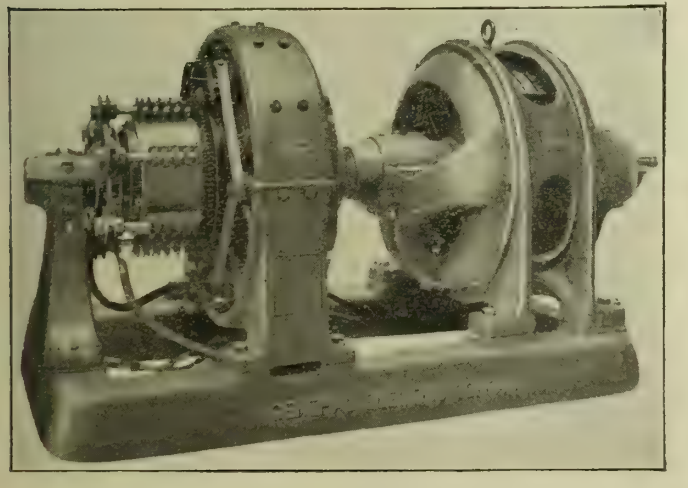


G-E Transformers and Oil Switches; Buffalo, Rochester and Pittsburg Coal and Iron Co., Punxsutawney, Pa.

They are designed and built to meet all the exacting requirements attendant upon mine conditions. In their construction are embodied the same features which have given to G-E transformers the preference with the great central stations in this country.

Motor generator sets manufactured by the General Electric Company are designed to assure continuous operation under the varying conditions of load found at mines. These sets will stand from 100 to 150% overloads momentarily without injury.

Fire proof series and commutating field windings of a self ventilating type, armature equalizer con-



150 kw. G-E Motor Generator Set.

nections mounted on back of armature where they are easily kept clean and armature conductors held in place by wedges and easily replaced in event of accident are a few of many superior features found in these machines.

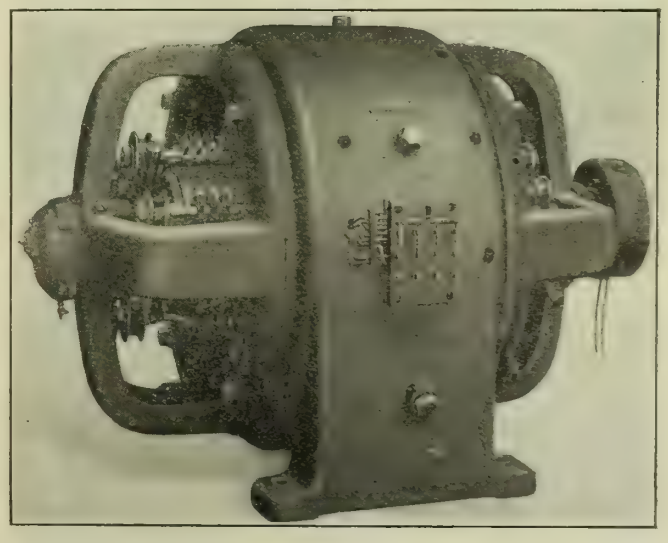
G-E switchboards for mine work are reliably and correctly designed, with special reference to mine conditions. Among their many advantages—where grounded neutrals are used in connection with min-



G-E Switchboard, J. K. Dering Mine, Clinton, Ind.

ing locomotive service—these switchboards permit multiple connection of the series field of an incoming generator with those of running machines. This permits voltage adjustment before closing the main switch, insuring correct polarity of the incoming machine and the least disturbance in paralleling.

G-E Rotary Converters designed for mine service are highly efficient and capable of carrying 100 to 150% momentary overloads. These machines are self-starting from the alternating current end, have



100 kw. Synchronous Converter.

moisture resisting windings and easily removable form wound coils and are successfully applied in many representative mines throughout the world in all sizes up to 4000 Kw. or larger.

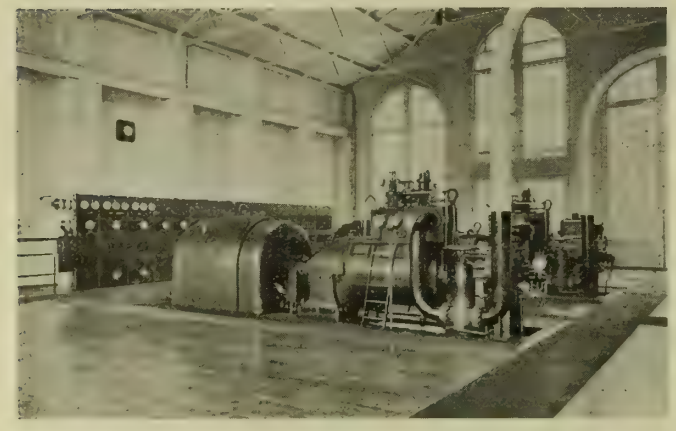
WESTINGHOUSE ELECTRIC & M'F'G CO.

EAST PITTSBURGH, PA.

SALES OFFICES

Atlanta, Ga.	Charleston, W. Va.	Dayton, Ohio.	Louisville, Ky.	Omaha, Neb.	San Francisco, Cal.
Baltimore, Md.	Charlotte, N. C.	Denver, Colo.	Los Angeles, Cal.	Philadelphia, Pa.	Tacoma, Wash.
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Bluefield, W. Va.	Cincinnati, Ohio.	*El Paso, Tex.	Milwaukee, Wis.	Portland, Ore.	Seattle, Wash.
Boston, Mass.	Cleveland, Ohio.	*Houston, Tex.	Minneapolis, Minn.	Rochester, N. Y.	Spokane, Wash.
Buffalo, N. Y.	Columbus, Ohio.	Indianapolis, Ind.	New Orleans, La.	St. Louis, Mo.	Syracuse, N. Y.
Butte, Mont.	Dallas, Tex.	Joplin, Mo.	New York, N. Y.	Salt Lake City, Utah.	Washington, D. C.
*W. E. & M. Co., of Texas.		Kansas City, Mo.			

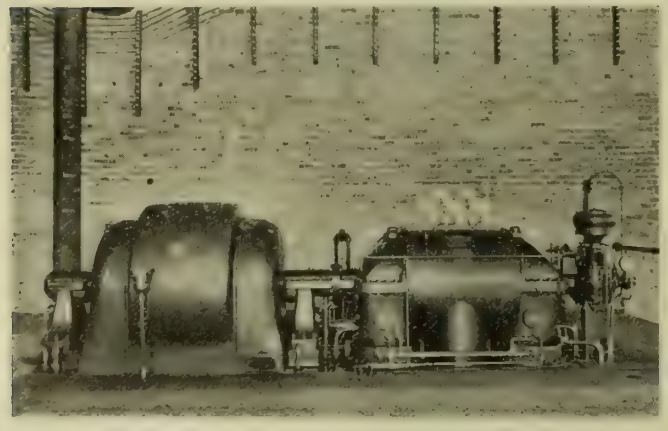
Prime Movers and Auxiliaries



Two 1,000 K.W. High Pressure Turbine Units.

High Pressure Turbines.

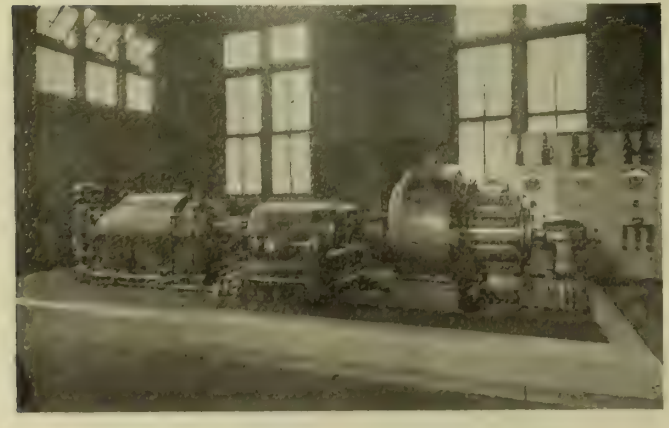
The demand for reduced cost in producing all commodities is national. Savings are today being effected which a few years ago were considered unnecessary. Formerly the cost of fuel, for producing power at a coal mine, was considered a negligible item, but today the amount used is charged for at market price. With the changing conditions, more economical prime movers are necessary, hence, the increasing use of turbines. The steam turbine is today—because of its simplicity, reliability, low cost of upkeep, and excellent economy—recognized as the standard prime mover. The Westinghouse Machine Company builds turbines in all sizes from the largest to the smallest and for all conditions of operation.



600 K.W. Low Pressure Turbine Units.

Low and Mixed Pressure Turbines.

If you are now operating noncondensing units in your power plant a marked improvement in economy and increase in capacity may be obtained by the use of a Low or Mixed Pressure Turbine. Such a turbine may be operated from fans, pumps or hoists, and in many cases it is possible to carry your entire electrical load with exhaust steam from such sources. In some plants the reciprocating engines furnish direct current for use near the power house while the turbine generates alternating current for use at distant points. If desirable the two systems may be connected by a rotary converter or motor generator set.



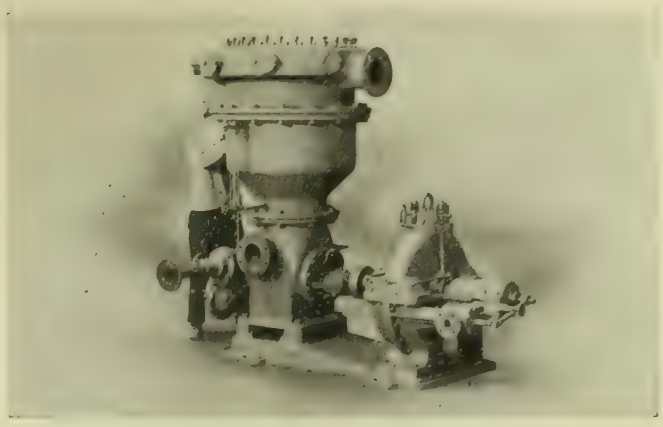
500 K.W. Direct Current Turbine Unit.

Direct Current Turbine Units.

When the use of direct current is advisable the installation of a Westinghouse Reduction Gear solves the problem in a most satisfactory manner. Such a gear reduces the high speed of a turbine to that of a standard direct current generator. The floating pinion shaft of this gear insures high efficiency and long life without constant expert attention. If the radius of load distribution is short such direct current units may be perferable to alternating current. The success of any exhaust pressure installation depends largely on the selection of the proper type of turbine. Competent engineers are at your disposal so write the nearest sales office.

Condensers.

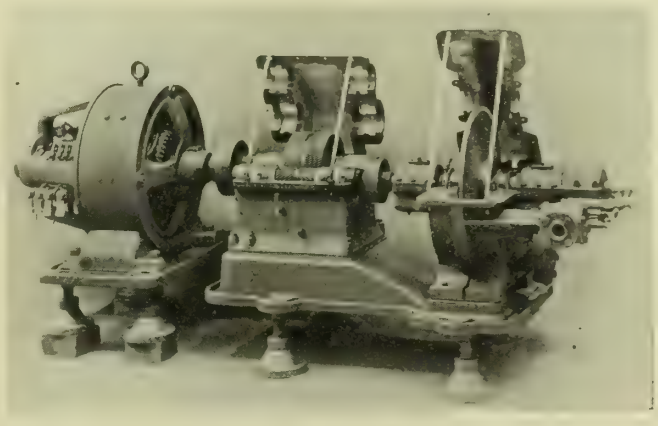
As the turbine is replacing the reciprocating engine so is the rotary auxiliary superceding the reciprocating type. The Westinghouse-Leblanc Condenser is the simplest and at the same time the most efficient on the market today. The same type of air pump is used with the low level jet, barometric and surface condenser. This pump consists of a single revolving element, there being no valves, close clearances or rubbing parts. When used with cooling towers or spray nozzels the amount of water lost will not exceed that used for boiler feed when running non-condensing units.



500 K.W. Low Level Jet Condenser.

Small Geared Turbo-Generator Sets.

Westinghouse geared, turbo-generator sets are available at reasonable cost, in capacities from 15 kw. up. They occupy less space, and take lighter foundations than engine sets of equal capacity. There are no reciprocating parts, such as eccentrics or cranks, no stuffing boxes to pack, and few wearing parts. They are rugged and thoroughly reliable. They require minimum attention, and the up-keep is exceptionally low. The exhaust steam is free from oil and may be used for heating or other purposes. The units are very efficient at all loads.



Stokers.

With its complete line of Stokers, this Company is prepared to meet the load and fuel conditions which are found to vary so widely in different plants. It is our practice to thoroughly investigate the individual plant condition in order that that type may be recommended which will secure the most economical results. The types manufactured are the Westinghouse Roney, Underfeed and Chain Grate Stokers.



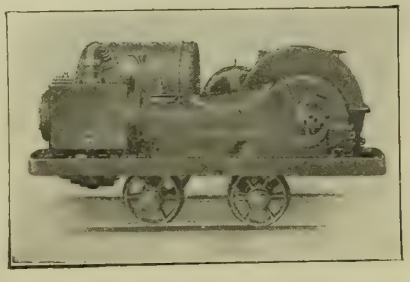
INGERSOLL-RAND COMPANY

11 BROADWAY NEW YORK

Manufacturers of Compressed Air Coal Mining Machinery

Small Air Compressors

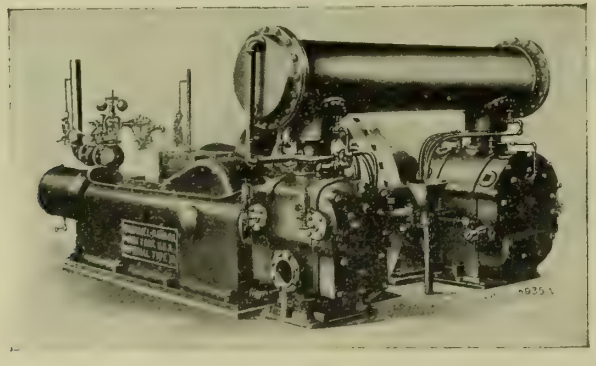
For supplying small demands, the "Ingersoll-Rogler" Class "ER" power driven, and Class "FR" steam driven straight line air compressors, embody all the refinements necessary to secure the greatest possible economy. Capacities to 1086 cu. ft. Pressures to 110 lbs. The Mine Car Portable Unit illustrates offers to the electrically operated mine a handy equipment for supplying air where it is to be used.



"Ingersoll-Rogler" Mine Car Compressor.

"Imperial" Air Compressors

The large number of "Imperial" Type Ten compressors installed all over the world are daily giving service second to none in long sustained economy. They are built with both Duplex and two stage air cylinders; simple or compound steam cylinders, or power driven by belt rope or short belted electric motor.



"Imperial" Type Ten Air Compressor.

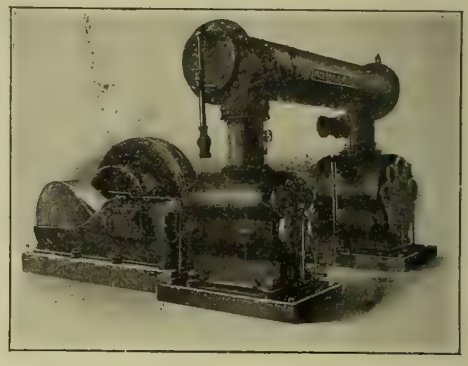
Capacities from 176 to 3500 cu. ft. per minute. Pressures to 500 lbs.

High Pressure Air Compressors

For high pressure work, such as compressed air haulage the company builds three and four stage units for pressures up to 2500 lbs. Full information upon request.

"Ingersoll-Rogler" Air Compressors

For large installations the "Ingersoll-Rogler" Class "ORC" Corliss Steam Driven and Class "PRE" Direct Connected Electrically Driven Compressors have features of superiority which insure a maximum delivery of compressed air, at a minimum power and upkeep cost.

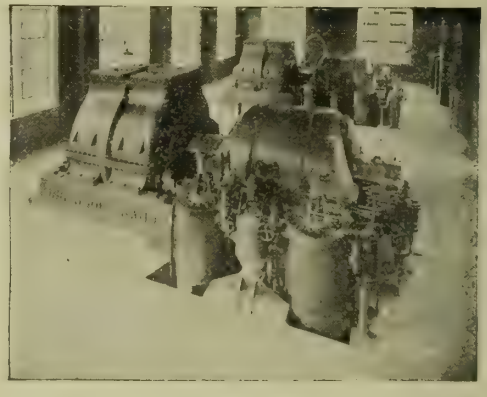


Ingersoll-Rogler" Class PRE Air Compressor.

Capacities from 1300 to 7900 cu. ft. Pressures 15 to 125 lbs.

Turbo Blowers and Compressors

The company is prepared to execute orders for Turbo Blowers for blast furnace and converted work; Turbo Compressors for all industrial purposes; Cupola Blowers and Gas Extinguishers. Pressures up to 110 lbs. and capacities to 60,000 cubic feet.



"Ingersoll-Rand" Steam Turbine Driven Turbo Blowers, installed by the Tennessee Coal, Iron & R. R. Co., Ensley, Ala. Capacity each, 55,000 cu. ft. per minute. Pressure 16 lbs.

The company has built a number of these machines all of which are giving absolute satisfaction.

Full information upon request.

Catalogs

Detail descriptions of the above types are contained in the following Bulletins:

No. 3030 ..... Class "ER."
No. 3031 ..... Class "FR."
No. 3311—3312 ..... Imperial Type Ten.
No. 3025—3008 ..... Class "PRE."
No. 3024—3123 ..... Class "ORC."

WESTINGHOUSE AIR BRAKE CO.

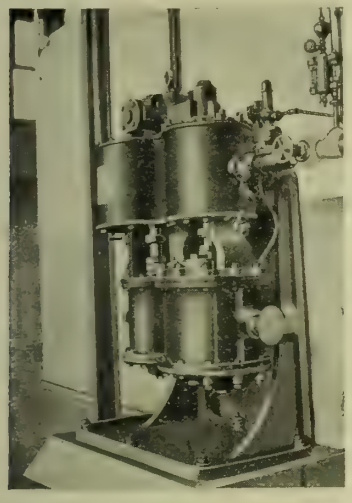
WILMERDING PA

Offices:

Atlanta	Candler Building	New York	City Investing Building
Boston	Exchange Building	Pittsburgh	Westinghouse Building
Chicago	Railway Exchange Building	Portland, Ore	Spalding Building
Columbus	Columbus Savings and Trust Building	St. Louis	Security Building
Denver	Tramway Building	St. Paul	Endicott Building
Houston, Texas	4802 Main Street	Salt Lake City	McIntyre Building
Los Angeles	Pacific Electric Building	San Francisco	Pacific Building
Mexico City, Mexico	4a Puente de Alvarado, No. 100	Topeka	New England Building

Coal Operators and Contractors

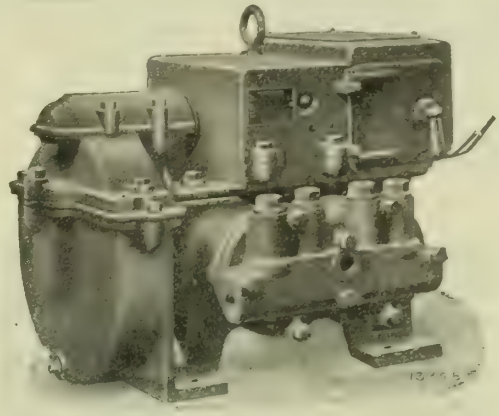
Have found Westinghouse Compressors ideally adapted to the mining industry. Built especially for the railroad brake service, these compressors necessarily embody extreme simplicity in design, absolute reliability in action, durability, compactness, efficiency and low maintenance expense. Combined with these features these machines possess a neat, attractive appearance, occupy little floor space, and may be installed at a minimum cost. Being automatic in operation, they require practically no attention.



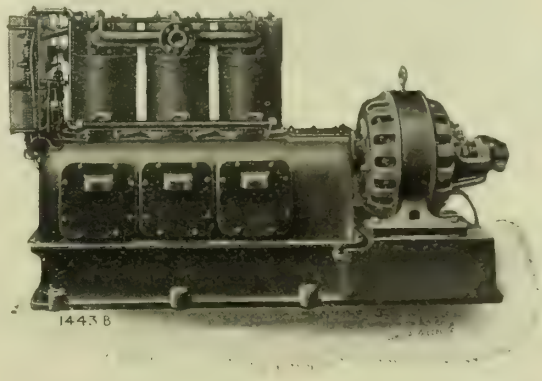
Typical Installation of 10½" Cross Compound Compressor in Power House. Compressor is Shown Mounted on Our Special Stand.

Steam Driven Air Compressors

Are furnished in both the single stage and cross compound types. Standard single stage compressors are built in 8", 9½" and 11" sizes, although to meet special conditions these compressors may be equipped with various size air cylinders. The 10½" Cross Compound Compressor is especially endorsed as having large air capacity and high efficiency and economy in steam consumption.



Type "H" Motor Driven Compressor with D. C. Motor.



3-VS Motor-Driven Compressor with A. C. Motor.
Type "H" for Intermittent Service. All Others for Continuous Service.

General Dimensions, Displacement and Weight of Westinghouse Standard Steam-Driven Air Compressors.

	8-Inch	9½-Inch	11-Inch	10½-Inch Cross-Compound
Diameter of Steam Cylinder	8 inches	9½ inches	11 inches	{ H. P. 10½ inches { L. P. 16½ inches
Diameter of Air Cylinder	8 inches	9½ inches	11 inches	{ H. P. 9½ inches { L. P. 14½ inches
Length of Stroke	10 inches	10 inches	12 inches	12 inches
Governor	1 inch	1 inch	1¼ inches	1¼ inches
Diameter of Steam-admission Pipe	1 inch	1 inch	1¼ inches	1¼ inches
Diameter of Steam-Exhaust Pipe	1½ inches	1½ inches	1½ inches	2½ inches
Diameter of Air Admission Pipe	1½ inches	1½ inches	1½ inches	2½ inches
Diameter of Air-Delivery Pipe	1¼ inches	1¼ inches	1¼ inches	1½ inches
Rated Speed, single strokes per minute	120	120	100	131
Displacement at rated speed	35 cu. ft.	49 cu. ft.	66 cu. ft.	150 cu. ft.
Over-all Dimensions	12 3/16" x 17 1/4" x 13 1/2"	42 3/16" x 18 1/4" x 14 3/16"	51 7/16" x 21 1/2" x 15 11/16"	56 1/16" x 41 1/2" x 21"
Net Weight	450 pounds	525 pounds	850 pounds	1800 pounds
Weight, boxed for shipment	550 pounds	625 pounds	975 pounds	2150 pounds
Lift of Air Valves—Suction	3/32 inch	3/32 inch	3/32 inch	3/32 inch
Discharge	3/32 inch	3/32 inch	3/32 inch	3/32 inch
Intermediate				1/8 inch

Motor Driven Compressors

Such as illustrated, need little introduction, since they are designed after the well-known street car type, the motor being direct connected to compressor through herringbone gear and pinion. They are entirely self-contained units, automatically controlled, efficient, reliable, and economical to operate and maintain. These characteristics have contributed to their entry in almost every industry, and especially the coal fields, where they are used on tipples, in repair plants, mines, etc. They may be furnished for either intermittent or continuous duty, for stationary or portable service, and with either direct or alternating current motors.

Motor Compressor	Piston Displacement, Cu. Ft. per min. at 90 lbs. pressure.	Size of Cylinder in Inches.	Crank Shaft R. P. M.	Motor R. P. M.	H. P. at 90 Pounds Pressure.	Dimensions in Inches. Length.	Width.	Height.	Approximate Shipping Weight, Pounds.
H-1	11	5 x 2½	194	1350	1.75	26¼	20¼	19⅛	630
H-2	16	5 x 4	176	1400	2.6	26⅛	26⅜	22⅜	860
H-3	20	6½ x 3	173	1100	3.5	31⅝	23⅛	22½	1090
H-4	28	6½ x 4¼	173	1250	5	31⅜	29 3/16	24⅞	1300
H-5	35	7½ x 4	172	1175	6.25	35 13/16	26⅜	25⅜	1450
H-6	50	8½ x 4	188	1100	9.25	38 11/16	26⅜	25½	1800
E-2	60	8½ x 4	226	1325	11	63¾	23¾	39½	2500
E-3	75	8½ x 6	188	1100	13.5	67¼	25½	45½	3000
3VS-11	100	7½ x 9	145	860	18	87⅞	30	49	5000
3VS-21	150	8½ x 9	170	860	27	93	33	50½	6200
3VS-22	225	9¾ x 10¾	161	860	40	107	38½	60	9000
3VS-23	300	11⅝ x 11⅛	146	860	54	120¼	40½	62⅜	12500
3VD	550	11 x 11⅛	150	700	100	135	48	92	16000

Belt Driven Compressors

Are also supplied for either intermittent or continuous service in capacities ranging from 4 to 75 cu. ft. per minute, and for pressures up to 350 lbs. per sq. in.

Accessories

Include compressor stands, governors for automatic control of compressors, cut-out cocks, gages, reservoirs, switches, steam valves, etc.

ARMSTRONG CORK & INSULATION COMPANY

125 24th STREET, PITTSBURGH, PA.

BRANCH OFFICES IN ALL THE LARGE CITIES

Products

Nonpareil Insulating Brick for boiler settings, breechings, furnaces, ovens, etc. **Nonpareil High Pressure Covering** for high pressure and superheated steam lines, feed water heaters, etc. **Nonpareil Corkboard Insulation** for cold storage rooms. **Nonpareil Cork Covering** for brine, ammonia and ice water lines and tanks.

Nonpareil Insulating Brick

Nonpareil Insulating Brick are the most successful insulating material yet devised for reducing the



Boilers insulated with Nonpareil Insulating Brick, H. J. Heinz Company, Pittsburgh, Pa.

loss of heat by radiation from boiler settings, steam drums, furnaces, etc. Not only are they excellent nonconductors of heat, but they also have structural strength and the ability to withstand relatively high temperatures. Their convenient brick form makes them especially well suited for installing in walls and arches, bonding the courses of Insulating Brick with the fire brick and common brick.

Composition

Nonpareil Insulating Brick are composed principally of diatomaceous earth. This peculiar material is practically pure silica and is composed of the shells or skeletons of microscopic plants that grew in the sea ages ago. It is estimated that there are 39 billion of these shells to the cubic inch, each one hollow and filled with air. In making Nonpareil Insulating Brick, the diatomaceous earth is mixed with finely ground cork, molded into proper form and then fired. The cork is burned out, leaving the brick extremely porous in structure.

Insulating Value

"Dead air," or in other words, air that cannot circulate, has long been recognized as the best insulating medium known (except a vacuum). As Nonpareil Insulating Brick contain not only the "dead air" confined in the diatomaceous earth, but also that in the pores formed when the cork is burned out, their insulating value, or ability to hold in the heat, is exceptionally high. Repeated tests have shown this insulating value to be ten times that of fire brick or red brick. In other words, one 4½-inch course of Nonpareil Insulating Brick built in the walls of a boiler setting will cut down the heat loss as much as 45 inches of fire or red brick. The saving which results will, under average conditions, be large enough to pay for the brick in less than a year even when using very cheap fuel.

Size

The standard straight brick is nominally 9 x 4½ x 2½ inches, and weigh about 1½ pounds. Various other shapes for arches, circles, etc., are also carried in stock. For the purchaser's protection, each brick is stamped with the trade-mark, "NONPAREIL."

Further Information

Full size sample brick, literature, prices and further information will be furnished on request.

Nonpareil High Pressure Covering

Nonpareil High Pressure Covering is also made of diatomaceous earth, combined with asbestos fibre, and here again the remarkable heat insulating value of this material is demonstrated.

Advantages

Compared to other coverings, Nonpareil High Pressure Covering is not only a better nonconductor of heat, but will withstand much higher temperatures without calcining or disintegrating. It is particularly well suited, therefore, for the insulating of superheated steam lines. Moreover, it will bear repeated wetting and drying without injury, and for this reason is an ideal form of covering for underground steam lines and those which come in contact with excessive moisture.

Application

Nonpareil High Pressure Covering is easy to apply and is furnished in sectional and block form of various thicknesses and also in plastic cement form.

Further Information

Samples, prices and further information furnished on request.



Nonpareil High Pressure Covering on steam lines and feed water heater.

Nonpareil Corkboard

Nonpareil Corkboard is the world's standard cold storage insulation. It is made entirely of pure granulated cork, compressed and baked in boards 12 inches wide, 36 inches long and 1, 1½, 2, 3, 4 and 6 inches thick. Literature and sample on request.

American Steam Gauge & Valve Mfg. Co.

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Products

Gauges—Both Indicating and Recording for Steam, Water, Air, Oil, Gas, Hydraulic, Ammonia and all other pressures; also Vacuum and Compound.

Gauge Testers, Engine Room Clocks, Revolution Counters.

Pop Safety and Relief Valves, Steam Whistles, Globe, Angle and Check Valves, Engine Indicators, Feed Water Regulators, Feed Water Grease Extractors, and Steam Traps.

American Gauges

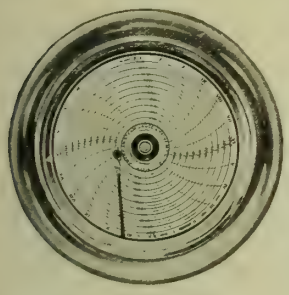
are the simplest in construction, yet so designed that maximum efficiency with longest service is assured to the user.



Gauges are too often judged or selected from superficial inspection only, with little or no attention to interior construction—the VITAL PART. In AMERICAN GAUGES only the best material and workmanship will be found, as well as accuracy. This means dollars in every sense of the word to the owner in both operating and maintenance expense. We furnish gauges for every purpose, and especially invite inquiries for installations where operating conditions are unusually severe. Estimates promptly furnished.

American Recording Gauges

The economical operation of power is safely guarded by the use of accurate, durable Recording Gauges. AMERICAN RECORDERS are constructed in the same reliable, workmanlike manner that is characteristic of all our products. The style of case is the same as our non-recording instruments, thus giving uniformity to gauge board installations. Highest grade clock movements are used, insuring accurate time records. Standard chart 8 inch, 24 hours. Special charts to order. Each gauge fitted with our improved fountain pen requiring filling monthly. We specialize in engine room gauge boards complete, and invite inquiry.



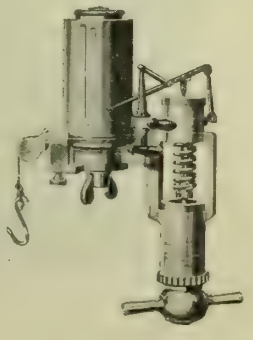


The American Pop Safety Valve

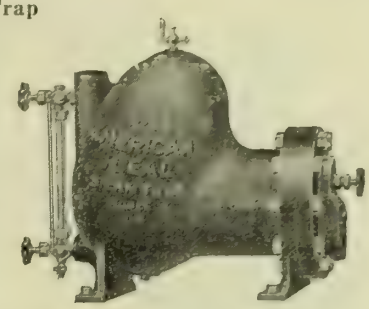
for stationary and marine boilers—fitted with American adjustable-blow-down ring—all adjustments from outside easily accessible. Few working parts. Best material and workmanship. Durable and economical in operation. Made to meet all requirements.

American-Thompson Improved Indicator

The original Thompson Indicator. The highest grade instrument of this kind on the market. New improved Detent Motion makes it possible to take several cards in less time than for one by the old method. Special catalog covering all details on request.



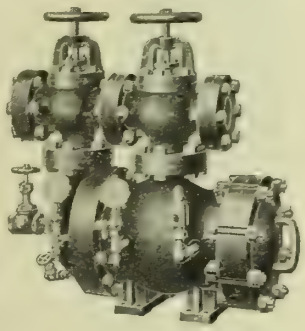
American Ideal Steam Trap



Model C—Regularly furnished for all pressures up to 250 lbs. Has patented valve leverage which permits use of heaviest guaranteed floats, and at the same time has much greater capacities at all pressures. Specify your traps on CAPACITY BASIS only and get FULL VALUE.

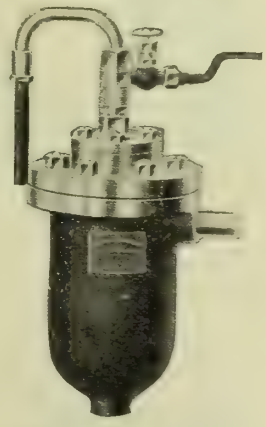
Send for DATA booklet.

The American H2O Grease Extracting Feed Water Filter should be installed in every plant where condensation is used for boiler feed. This practical device makes it impossible for oil to get into the boiler, thus preventing bagging plates, oil caked tubes and danger. It keeps the heating surface clean—increases steaming capacity—and lowers coal bills. Well constructed—has filtering surface equal to many times the area of the feed water pipes—has a device for applying a reverse current of steam for temporary cleaning.



Renewals are easy to make—every part is easy to get at—and the maintenance cost is practically nothing.

The American Thermofeed Regulator:



Maintains water level at fixed height.

Increases boiler efficiency and increases life of boiler.

Reduces expansion and contraction strains of boiler plates.

Reduces strains of rivets and seams.

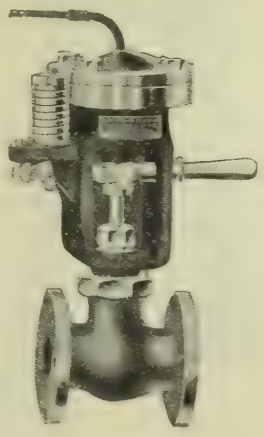
Protects boiler from danger of "low water."

Prevents wet steam from getting into engine cylinder.

Prevents priming—saves oil.

Increases engine efficiency.

By assuring properly proportioned flow of feed water, it increases effectiveness of feed water heater.



Prevents forced firing and uneconomical variations of firing.

Is always on the job—prevents careless regulation.

Is absolutely reliable.

It is ideal for use in large and small plants alike.

Requires practically no attention.

Reasonable first cost; no maintenance cost.

Saves its cost in six months.

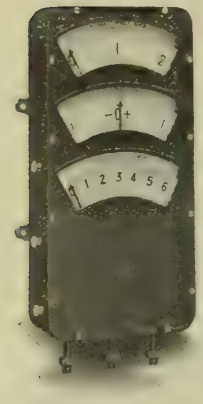
PRECISION INSTRUMENT CO.

Detroit, Michigan

ENGINEERS

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Boiler, Coal Saving, and Control Apparatus; Vacuum and Pressure, Indicating and Recording Gauges for all purposes; CO2 Recorders and Indicators; Water Meters and Coal Calorimeters.
Boiler Testing and Efficiency Control.



Indicating Gauges for Pressure or Vacuum

250 ranges. Boiler control gauges for forced draught, draught at damper, draught over fire.

No liquid, accurate and sensitive.



Recording Gauges

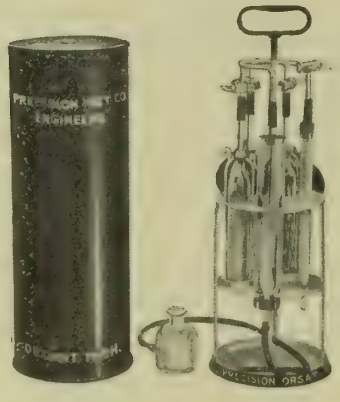
Accurate at every point in stroke, dead beat, and sensitive for pressure or vacuum.

Over 250 ranges.

Orsats

for CO2 and Draught; CO2 and CO; CO2, CO and O; CO2, CO, O, and H.

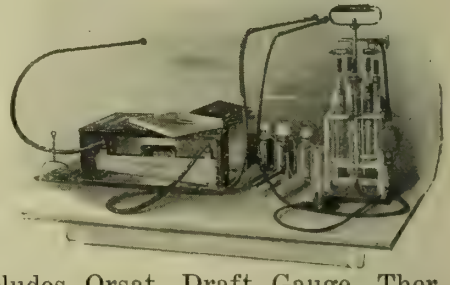
Compact, accurate, good design and at low prices.

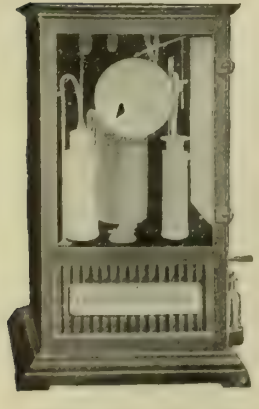


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For Boiler Efficiency Investigation.

The most compact, useful combination of standard apparatus presented to the engineering public. Includes Orsat, Draft Gauge, Thermometer and all accessories.





Precision CO2 Recorders

Five types for CO2 only or CO2 and draught, for 24 hour or 60 day record. Now in use 5 years, thus proving long life and reliability.



Parker CO2 Machine

No glass parts. No rubber tubing, Easily installed. Electrically driven with recorder and indicator.

On Your Requirements We Will Be Pleased to Present Quotations.

THE WILLIAMS GAUGE COMPANY

PITTSBURGH, PA.

Manufacturers of

"Williams" High Grade Steam Specialties

Products

"Williams Safety" Feed-Water Regulators, "Safety" Water Columns; Pump Governors; Steam Operated Traps; Water Gauges; Gauge Cocks.

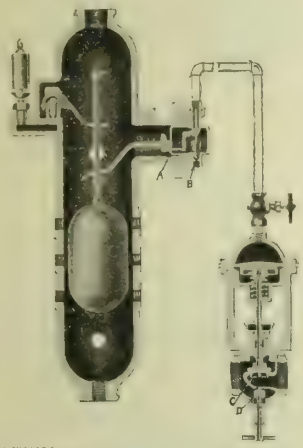
"Williams Safety" Feed-Water Regulator

Six million horse-power boilers in upwards of five thousand plants.

The above number of "Williams" Feed-Water Regulators are in use today. This regulator has a service record of twelve years, with only nominal expense for repairs.

With "Williams" Regulators on the boilers and "Williams" Governors on the pumps, the entire system of boiler feed is mechanical.

Hydrostatic pressure test, 750 pounds.



"Williams Safety" Feed-Water Regulator.

The "Williams" is the only regulator with a continuous feed valve that admits water to the boiler at the rate of steaming. After the continuous feed is opened for a known condition, the automatic valve keeps the water line at the desired point.

The "Williams" secures a steady rating from any boiler, and a more uniform degree of superheat is obtained because of the steady water level maintained. The non-pulsating flow enables the feed-water meter to keep an accurate chart record. **Guaranteed for two years.**

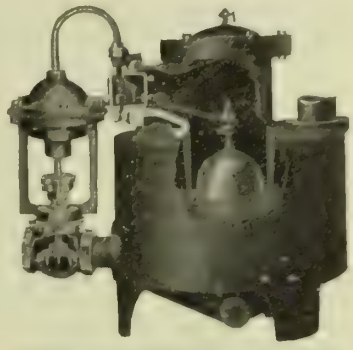
The "Williams Safey" is a water column, safety alarm column and regulator combined. Temperature changes do not affect it. **Auxiliary type also built.**

Construction—The column is cast iron, extra heavy. The working parts are of bronze. The operating valves (A) and (B) are of phosphor bronze, with renewable seats of nickel, bronze or monel metal. All valve bodies of "navy metal" bronze. **No cast-iron valve bodies.**

Continuous Feed—The valve (D) secures a continuous feed. In regular service this valve is opened to admit water at slightly below the rate of evaporation. The automatic valve (C) opens at infrequent intervals to augment supply of water as required. Intermittent valves furnished where conditions require.

"Williams" High Pressure Trap for 25 to 250 Pounds Pressure

The "Williams" High Pressure Trap operates on the same principle as the regulator. Positive in action, it is impossible for steam to blow through. Discharge valve has renewable nickel bronze seat. This trap is listed and sold on the size of the discharge and not on the size of the inlet, as is the common practice. A "Williams" 1½-inch trap with its 1½-inch discharge equals in performance at least six traps that have only ¼-inch discharge opening. Price is very low when capacity is given due consideration.



"Williams" High Pressure Trap.

"Williams" Steam Pump Governor

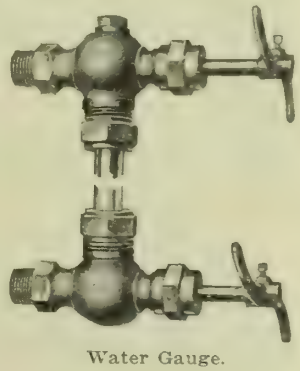
The "Williams" Pump Governor is capable of very close adjustment, which means exceptionally smooth running. Two discs prevent "hammer" when closing, and insure a tight seat. Angle or straightway types with flanged or screwed ends. All working parts are bronze.



Pump Governor.

"Williams Sterling Type" Water Gauges

These gauge glass valves are built entirely of Government standard "navy metal" bronze and designed for steam pressure up to 250 pounds. All parts are extra heavy; constructed with deep stuffing-boxes and quadruple threaded stems, which insure service and high efficiency under all water conditions. Comply with all State and insurance requirements governing boiler appliances (including those of Canada), and are absolutely guaranteed.



Water Gauge.

"Williams Ball Type" Gauge Cock

Simple in construction; practical and efficient in operation. The only "Try-cock" which fully meets demands of high pressure service. Fitted with special composition or bronze discs, which, lasting indefinitely, stop annoying leaks or constant waste of steam; and construction is such that "wire drawing is practically impossible. Can be removed for repairs while boilers are under pressure, and is fully guaranteed covering material and workmanship.



Gauge Cock.

FOSTER ENGINEERING COMPANY

Manufacturing Engineers of Automatic Valve Specialties

NEWARK, NEW JERSEY

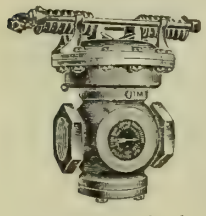
Branch Offices:

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Products

The "Foster" Pressure Regulators; Pump Governors, Non-return Stop Valves; Emergency Stop Valves; Float Valves; Back Pressure Valves; Fan Engine Regulators; Free Exhaust or Atmosphere Relief Valves; Lever Balance Valves; Hydraulic Reducing, Regulating and Relief Valves; Vacuum Regulators, and kindred devices.

Class W Pressure Regulators



Designed to maintain a constant terminal pressure of steam, water, gas or air, under certain conditions, from an available initial or supply pressure in excess of same. Simple in construction, rugged, compact, easily repaired. Ample capacity, no dash pot, noiseless, no small parts to stick. Diaphram actuated with compensating springs externally fitted. Suitable for initial working pressures up to 250 lbs. and for terminal pressures of from 5 to 125 lbs. (dependent on spring power). For service where demand at reduced pressure is fairly constant.

Classes Q. and Q. H. Pressure Regulators



A sensitive, reliable Regulator for heating systems (air or steam). A high-grade low pressure Regulator. No weights or close fitting pistons and is easily adjustable for pressures desired between 0 and 15 lbs. The most reliable steam heating Regulator produced—upkeep reduced to minimum. Made in sizes ¾ inch to 12 inches. Smaller sizes 2 inch and under are fitted with brass bodies; larger sizes have iron bodies, composition mounted and composition renewable seats.

"Q. H."—Same Valve with differential inlet and outlet connections facilitating easy application to enlarged outlet piping connections.

Piston Actuated Pump Governor



Designed for general service and to meet the demand for a Pump Governor that controls the discharge pressure from the pump. Fitted with renewable composition discs, easily and quickly renewed, insuring tight seats. An extremely simple, self-contained Governor—set the adjusting spring for the desired discharge pressure from pump and the Governor will do the rest. Made in angle and straightway body. Sizes one-half to two inches, inclusive, all composition. Two inches and larger, iron body, composition mounted. Will give closer and longer continuous service than any other similar Valve on the market.

Foster Back Pressure Valve



The Foster Back Pressure Valve aims to reduce common difficulties usually experienced with inefficient competitive products, and was designed to meet the demand of modern practice. Does not chatter. Durability, reliability, functioning power at any pre-determined pressure—0 to 15 lbs.—fully assured. The only thoroughly cushioned self-contained Back Pressure Valve on the market. Made in flanged ends, sizes 2½ inches to 20 inches.

Foster Float Valve



Auxiliary operated (can also furnish "direct acting types"). Quick, sensitive and positively non-leakable; is not cumbersome or frail in construction. Functions with the pressure in supply pipe; may be located at any desirable point, directly or indirectly connected to a small operating Float in the tank. Invaluable on steam line and automatically controlling admission of steam to pump returning water of condensation. May be used in other ways. Angle and globe bodies. Sizes up to two inches, inclusive, all composition. Larger sizes iron body, composition mounted, with removable seats.

Class G Pressure Regulator



A superior high-grade Pressure Regulator that does not leak or stick. Suitable for final working pressure from 0 to 250 lbs. Single seated, auxiliary operated. Holds tight. Suitable for air, steam, oil or water under certain conditions. (We advise them.) Can be installed equally well on horizontal or vertical pipe. Internal parts are easily and quickly renewed. All auxiliary parts interchangeable. Especially recommended for service where demand for reduced pressure is intermittent.

Class U Pressure Regulator



A water pressure regulator that regulates (equally adaptable for air service under certain conditions). Capable of reducing 300 pounds initial pressure to a final of from 5 to 200 pounds. A strong, rugged, reliable product. For service where a steady, even delivery pressure is required whether discharge lines are open or closed. Main valve is fitted with soft disc, easily renewable when necessary. Globe body only. Sizes ½ inch to 2 inches, inclusive, all composition. 2½ inches to 12 inches, iron body, composition mounted.

Class G Pump Governor



Auxiliary operated, fitted with diaphram on water end, adapted for any service where a steam driven air compressor or Pump Governor can be used and is, without exception, the most satisfactory Valve that has been produced for the regulation and automatic control of pumps. None better. Recommended for hard service where the most severe and exacting duty and close regulation is desired. Guaranteed to operate within a variation of three pounds or less. Holds tight. Made only in globe bodies. Can be installed in any position. Sizes ½ inch to 2 inches, all composition; 2½ inches to 6 inches iron body, composition mounted. For discharge pressure up to 300 lbs.

Automatic Non-Return Stop Valve



Automatically cuts out a defective boiler in the event of blowing out of tubes, poor firing, etc. By their use the admission of steam to a cold boiler from the battery to which it is connected is impossible. A positive factor of safety. The only thoroughly cushioned Non-Return Valve extant. An equalizing Valve. The "Watch Dog" to the boiler equipment. Does not stick, bind, pound or chatter. Fitted with removable seat rings, keyed. For saturated and (especially prepared) superheated steam. Produced in Angle or Globe Bodies. Semi-steel and cast steel. Designed for service rather than to meet competition.

Foster Class G Fan Engine Regulator



Designed to automatically control direct connected fan engine or jet blower system by the boiler pressure. For forced or induced draft equipment. Simple in adjustment. Guaranteed to operate within two pounds variation in pressure. Solely a high-grade device. Sizes one-half inch to two inches, composition, union ends only. Larger sizes iron body, brass mounted, screwed or flanged ends as desired. Strainers furnished. Requires no manual attention after adjustment.

Homestead Valve Manufacturing Company

MANUFACTURERS OF

Homestead "Quarter Turn" Valves and Other Specialties

Works, Homestead, Pa. :: :: :: P. O. Box 1754, Pittsburgh, Pa.

Products.

HOMESTEAD SELF-LOCKING STRAIGHTWAY, THREE-WAY AND FOUR-WAY HIGH PRESSURE BALANCED PLUG VALVES AND HOMESTEAD LOCKING COCKS. FOR STATIONARY, LOCOMOTIVE AND MARINE USE.

Special High Grade Metal Valve for Resisting Mine Water and Other Acids.

The Homestead Valve is "Unlike all Others," especially unlike Globe and Gate Valves because when pressure passes through it the seat is **absolutely protected from wear.** Fully opened or closed by a quarter turn, straight and unobstructed passage, making it particularly suitable for the handling of heavy liquids or for carrying off sediment.

Description.

Fig. 1 is a sectional view. The valve is so constructed that when it is closed the plug is at the same time forced firmly to its seat. The traveling cam "A" is prevented from turning with the steam by means of the lugs "B," which move vertically in slots. When valve is open the cam will be in the lower part of the chamber in which it is placed and the plug will be free to be easily moved. A quarter of a turn causes the cam to rise to the upper surface of the chamber, while a slight motion in the other direction releases the cam and the plug turns easily to its proper open position. "E" and "D" are balancing ports which allow the pressure to predominate at the top of the plug holding it gently in its seat while valve is open. Made in all sizes up to 6 inches and for all pressures up to 5,000 pounds per square inch: in Straightway, Three and Four-way patterns.

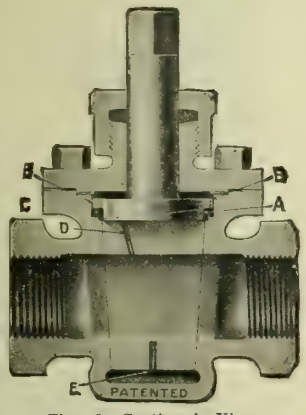


Fig. 1—Sectional View Homestead Straightway Valve.

Homestead Acid Resisting Valve.

The valve shown in Fig. 4 was designed to supply the demand for a valve which would withstand the effects of sulphuric and other acids. It is also used for many other kinds of service. It outwears several valves made of ordinary steam metal. The brass used is a high grade special metal especially suitable for the purpose. It will withstand a higher pressure and more exacting service than the ordinary kind of valve. The mechanical principles are the same as in the Homestead Straightway Valve. Also made of Monel Metal for special service.


Fig. 4—Homestead Acid Resisting Straightway Valve

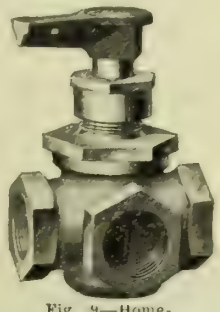
Homestead Three-Way Valve.

The Homestead Three-Way and Four-Way Valves are used principally in operating hydraulic or pneumatic machinery in factories, mills, mines and on railroads. They are made according to the same principle as the Homestead Straightway Valve and are superior to the ordinary Three-Way and Four-Way Cocks in every way.

The Homestead Valve is best known as a Boiler Blow-off Valve. It is extensively used for this service on stationary, marine and locomotive boilers.

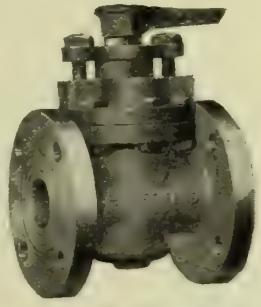
Special Types.

Figures 37 and 32 show a few of the special types we are prepared to make according to the specifications of the customer. Each valve is made for a special requirement and each fills the requirement perfectly.


Fig. 9—Homestead Three-way Valve; Brass, 200 Lbs. Working Pressure.

Special Service.

If there is any "Special Service" for which the ordinary standard valve is not suitable, we would be pleased to take up the matter of special valves for extraordinary conditions. In figuring with you for special equipment we may be able to make useful suggestions for peculiar valve requirements.


Fig. 6—Homestead Blow-off Valve.

Equipment and Facilities.

Our plant is equipped with the most modern valve making machinery, and with our long experience of over twenty years, we are in a position to make better valves and in greater quantity than ever before. A large force of skilled workmen makes it possible for us to fill all orders promptly no matter how large or how small.

When purchasing look for the name "Homestead" on each valve or handle. There are many imitations and this precaution is necessary.


Fig. 37—Tank Wagon Valve.

Catalogue.

Our catalogue fully meets the requirements of the trade. It will be of great service to you when ordering valves or seeking information regarding their construction. We will be pleased to send you a copy upon request.


Fig. 32—Locomotive Blow-off Valve.

JENKINS BROS.

80 White Street NEW YORK | 524 Atlantic Avenue BOSTON | 133 No. 7th Street PHILADELPHIA | 300 West Lake Street CHICAGO

Jenkins Bros., Limited, Montreal and London. Jenkins Rubber Co., Elizabeth, N. J.

Products.

Jenkins Bros. Valves, in Brass, Iron Body, and Cast Steel for all pressures and purposes; Mechanical Rubber Goods, Sheet Packing, Gaskets, Gasket Tubing, Pump Valves, Valve Discs, Union Rings, and the like.



Fig. 106
Globe, Screwed.

Jenkins Bros. Valves, Standard Pattern, are made in brass and iron body in Globe, Angle, Cross, Check, Y, Radiator, and other patterns, screwed or flanged. They are the original Renewable Disc Valves. The Jenkins Bros. Discs, with which they are fitted, are of special rubber composition, readily adapting themselves to the raised seats, ensuring absolutely tight closure. As there is no metal-against-metal contact of seats, there is less abraision and wear and the labor of regrinding is obviated. Jenkins Bros. Discs are inexpensive, give long service, and when worn out can be readily renewed without removal of valve from piping. All Standard Pattern globe and angle valves when intended for steam service are fitted with Jenkins Bros. No. 119 Discs, a new composition, tough and flexible in service, guaranteed for 150 pounds working pressure; for cold water, gas and air service, valves are fitted with Jenkins Bros. Soft Flexible Rubber Discs.

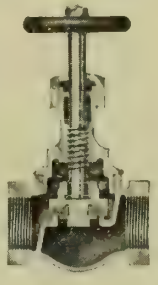


Fig. 105
Sectional Cut
Globe Valve



Fig. 296
Iron Body
Y, Screwed.

Jenkins Bros. Valves, Extra Heavy Pattern.

A distinct line of brass and iron body Globe, Angle, Cross, Check and Y Valves, especially designed for use under high pressure and very severe conditions. No effort has been spared to make them representative valves of their class, in line with Jenkins Bros. established policy of making valves of superior grade, absolutely guaranteed for the service for which they are recommended.

For high pressure, superheated steam, and hydraulic pressures valves are made with cast steel bodies, monel metal mountings, guaranteed for working steam pressures up to 350 pounds, and total temperature of 800 degrees F.



Fig. 142
Iron Body Globe,
with Yoke,
Flanged.

Particular attention is called to the Jenkins Bros. Automatic Equalizing Stop and Check Valves, designed to equalize the pressure in a battery of boilers, preventing one boiler from working at a lower pressure than another. They automatically shut off the flow of steam from the header to a boiler in case of a broken tube, thus preventing accidents. No boiler plant operating two or more boilers should be without one or more of these valves.

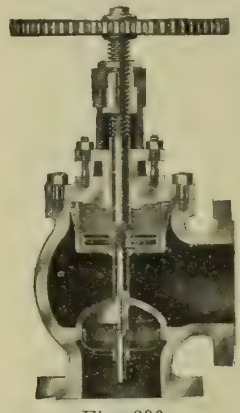


Fig. 293
Automatic Equalizing
Stop and Check Valve.

Gate Valves.

Jenkins Bros. Gate Valves are made in brass and iron body in three patterns: Standard, for 125 pounds working steam pressure, or 175 pounds water; Medium, for 175 pounds steam or 250 pounds water; Extra Heavy, for 250 pounds steam or 400 pounds water.

They are of the solid wedge, double-face type and have improved globe-shaped bodies, a design which secures the greatest possible strength, good proportion, and neat appearance. They are made with Inside Screw, Stationary Spindle or with Outside Screw and Yoke, Traveling Spindle.



Fig. 270
Sectional Cut
of M. P. Brass
Gate.

Mechanical Rubber Goods.

In this line we are offering specialties which are the result of over 50 years of progressive effort, as we are the original manufacturers of rubber composition discs for valves and unvulcanized sheet packing.

Jenkins '96 is the name of our high grade black unvulcanized sheet rubber packing, furnished in sheets or gaskets. **Jenarco** is a new sheet packing, very tough and flexible, and suitable for severe service.

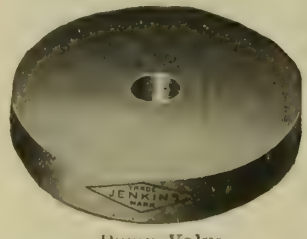
Jenkins Bros. Pump Valves are made from various compounds, each of which is best adapted for a certain kind of work. We make valves which have adequate strength and tenacity for the severest kinds of mining service. We would be glad to hear from mines having trouble with the pump valves they are using, as we are confident of meeting their requirements. State your working conditions, giving diameter, thickness and size of hole, **and we will be responsible for the service.**



Fig. 327
Hub End Gate



Fig. 326
Iron Body Gate
Inside Screw
Flanged.



Pump Valve

Qualities and Guarantee.

All genuine Jenkins Bros. products are absolutely guaranteed to be perfect in workmanship and suitable and efficient in the service for which they are designed.

A new catalogue, No. 20, giving sizes, styles and list prices, mailed on request.

DURABLA MANUFACTURING CO.

General Offices:
114-118 Liberty St., N. Y. C.
Branch Offices:
Westinghouse Bldg., Pittsburgh, Pa. Fisher Bldg., Chicago, Ill.

Gasket Material, Gauge Glasses, Valve Discs, Etc.

Durabla Gasket Material

The DURABLA branded gasket material can be used as a standard from which gaskets for any purpose can be cut. It is guaranteed to make a tight joint wherever a permanent gasket is required, whether it be for pipe flanges or for flanges on pumps or machinery.



Registered Trade Mark All Over the Sheet.

The Durabla Mfg. Company maintain a Service Department which will make a study of any unusual conditions of your flange packing requirements and make a report showing the saving that can be made by standardizing on the DURABLA gasket material for all gasket work.

The DURABLA sheets can be rolled up and will not harden or crack in stock or service. It is equally efficient on high pressure, water, oil and gasoline engines. Sheets are carried in stock, measuring 48″ x 60″, 36″ x 108″ and 48″ x 120″.

Gaskets cut from the DURABLA sheet are carried in stock for standard and extra heavy flange pipe. Prices on gaskets of any size, shape or thickness, furnished on request.

Durabla Metallic Gauge Glasses

The DURABLA metallic gauge glasses have no equal for efficiency and safety. The DURABLA glasses are used and recommended by railroad companies and power houses where these qualities are demanded.

All sizes have fused ends.



"Durabla" Etched on Every Glass.

Durabla Lubricator Glasses

The DURABLA Lubricator Glasses are made from the same quality of glass as the gauge glasses and have no equal, being practically unbreakable.

Glasses for klinger gauges always in stock as well as bulls eye glasses for all makes of lubricators.

Durabla Valve Discs

The DURABLA Valve Discs are of exceptional quality. They will stand high temperatures and will not harden or crack. The DURABLA Valve Discs will save extra labor and expense and add life to your valves.



"Durabla" Valve Disc.

BOSTON BELTING COMPANY

Manufacturers of

Mechanical Rubber Goods

84 Linden Park Street, Boston

Branches:

New York	Buffalo	Chicago	San Francisco	Portland, Ore.
100 Reade St.	90 Pearl St.	172 W. Randolph St.	55 First St.	105 First St.

Agencies in All the Principal Cities.

Products

Rubber Belting for power transmission and conveying purposes; Hose of all kinds; Packings in great variety; Valves; Rubber Diaphragms; Gaskets; Tubing; Mats and Matting.

Transmission Belting

Made on specially woven duck and from good rubber, to insure adequate strength and freedom from stretch; is uniform in width and thickness; waterproof; costs less than leather belting.



Conveyor Belting

For conveying coal, coke, slag, ores, sand, cement, gravel, grain and other materials. Made on specially woven, extra heavy cotton duck, and high grade rubber throughout.



Furnished with regular or an extra thick rubber cover on one or both sides, to withstand abrasion. Conveyor belts are always made to order. Our facilities for this work are unsurpassed, and great care, backed by long experience, is always taken to make these belts strong, durable and satisfactory.

Hose

For air, water, steam, gas, suction, fire protection, and all purposes for which rubber hose can be used. Each kind of hose is made with especial regard to the use for which it is intended, and "service-giving quality" is our aim.



Hose supplied with wire wrapping and other kinds of protective coverings.

Cotton Fire Hose (Rubber Lined)

Light, medium and heavy fabrics, suitably adapted for different service conditions. Superiority of the woven fabric, assuring adequate strength and wearing qualities, and high grade durable linings, are distinguishing features of our product.



Our "American Underwriters" Cotton Rubber-Lined Hose is made in accordance with National Standard specifications and meets all insurance requirements.

Unlined Linen Hose of the best quality supplied for inside fire protection equipment.

Pump Valves

We have the proper equipment and manufacture Valves for all styles and makes of pumps. Valves supplied for all service conditions: hot, cold or gritty water, oils, chemicals, great pressures and high temperatures. State fully your service conditions, and we can supply a satisfactory and economical valve.



Packings

For pistons and valve rods. For flanges and joints. Round or square spiral packing and ring packings for steam.



Square pump or hydraulic packing for cold or hot water.

Sheet rubber packings, pure or with cotton fabric, or brass or steel wire insertion.

"Phoenix" Red Sheet Packing — good for all-around service.

"Black Diamond" Sheet Packing—especially good for its heat and oil resisting properties.

Forsyth Metal Insertion Packing—a pliable metal insertion sheet packing with elastic rubber faces.

Gaskets and Gasket Tubing. Diaphragms. Tubing. Springs. Rubber-Covered Rollers. Washers. Mats, Matting and Treads.

THE B. F. GOODRICH COMPANY

Factories: Akron, Ohio

REPRESENTATIVES IN ALL DISTRICTS

Conveyor Belts, Packing, Fire Hose, Elevator Belts, Air Drill Hose, Suction Hose, Drive Belts, Water Hose, Rubber Gaskets, Valves, Molded Rubber Goods

Conveyor Belts

"Longlife."—For coal, ore and rock conveying. Special duck, extreme flexibility for troughing purposes. High friction, wear-resisting cover and an edge construction never



before equaled. The belt for hard duty.

"Maxecon."—For ordinary conditions but as strong in its field as "Longlife." A medium priced belt that is reliable and serviceable.

Elevator Belts

"Goodrich" Elevator Belt: Special high quality throughout. Designed for most severe classes of service, particularly adapted to mining work.

"Akron."—High grade for hard duty.

"Sterling Stitched."—For general service under ordinary conditions.

Drive Belts

Commander."—A friction surface belt; special construction; in a class by itself; for extreme hard service.

"Pinnacle."—Friction surface type; long wearing; extra quality; also built for hard duty.

"Pilgrim."—Rubber-covered type: for general service. Heavy duck, good friction; entirely reliable. Plain or stitched, as desired.

Air Drill Hose

"Commander."—Braided fabric construction; plies that will not unwrap; heavy rubber wear-resisting cover and oil proof tube. Also "Goodrich" and "Akron"—wrapped duck; good quality throughout.

Fire Hose

"Newtype and Lehigh."—High grade cotton fire-hose,



with an outer rubber cover, especially built for mining service and for like unfavorable conditions.

Suction Hose

Grades to suit all purposes: Goodrich smooth or rough bore style. Goodrich quality throughout.

Water Hose

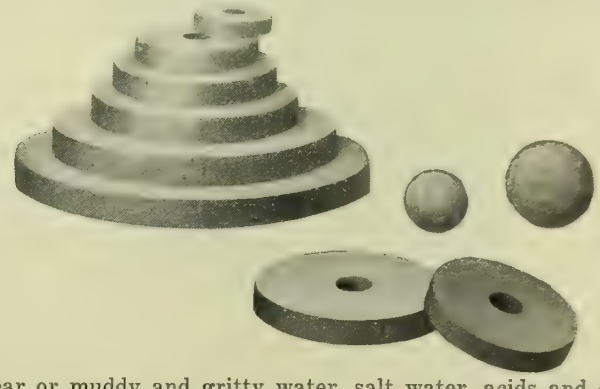
"Goodrich and Monitor."—Braided fabric hose.



"Cascade and Deluge."—Wrapped duck hose for all general purposes.

"Goodrich" Pump Valves

There is no class of our product which we take greater pride in stamping with the "Goodrich" trade mark. Our list of grades is complete for cold, semi-hot or hot water;



clear or muddy and gritty water, salt water, acids and oil; high medium or low pressure. Proper compounding and the "know how" puts service into every "Goodrich" valve for the severe and exacting requirements of mine pumps in the Coal Regions.

Specific recommendations are as follows: Grade No. 105, semi-soft valve for cold water pressures up to 150 lbs. maximum. Grade No. 60, medium hard, for cold water, highest pressures. A dependable valve for the most severe pumping service. Grade No. 200, bone hard valve, for boiler feed service, and general hot water pumping. Grade No. 305, soft valve of highest quality, for jet condenser and air pump service and all other conditions requiring a valve of this nature.

Test samples will be furnished upon receipt of dimensions and service conditions.

Goodrich Valve Discs for Brass Globe Valves

Our line of sizes is complete both in the oblong hole Standard Jenkins style, and round hole type.

Write for test samples, giving size.

Packing

"Akron."—The most dependable red sheet packing made; admirably adapted to all classes of steam service.

"White Star."—Of same high quality as "Akron" except lighter in weight per square yard.

"Superheat."—No steam surface is too hot for "Superheat." It is thoroughly reliable for superheat steam joints, acid, ammonia, etc. A combination of the highest quality asbestos and rubber—enormous tensile strength; not affected by heat, cold or vibration and can be used repeatedly on flange joints.

We also offer red sheet brass wire inserted diaphragm and cloth insertion, red tubular gasket packing, spiral square duck, round and square duck, square rubber back, round piston packing and pure gum strips.

Rubber Gaskets

All grades and shapes for all requirements.

The Goodyear Tire & Rubber Company

AKRON, OHIO

Branches in 65 Cities

Kantkink Hose

Goodyear Kantkink Flexible Metallic Hose is specially designed for compressed air, gas, water or steam.

It is built with a wire armor of remarkable strength. This armor so protects the hose as to avoid kinks and tangles.

Advantages of Armor

Resistance to pressure and great strength are gained through this distinctive Goodyear process of armoring hose.

The extreme flexibility allows a wonderfully short bend when a quick turn is required. And because of this armor, a break in the hose can scarcely occur.

Unavoidable accidents that would crush ordinary hose—even ordinary armored hose—will not affect Goodyear Kantkink Flexible Metallic Hose.



As a Convenience

This Kantkink hose is used for many purposes where ordinary hose would signally fail.

Because it will not kink, twist or become frayed, it may be applied for service with certainty of performance. Kantkink is always the hose for use where the service demands great lengths and involves changing distances. Being flexible and non-kinking, the excess length is taken up with ease and without the damage that wrecks ordinary hose.

Durability and Economy

Goodyear Kantkink Flexible Metallic Hose, because of its very structure, does not suffer elongation. For a like reason expansion and contraction are controlled.

Its heavy armor and strong tube greatly increase the durability of Kantkink over ordinary armored hose. This added life makes Kantkink unusually economical.

Marked Utility

The superior service and longer life of Kantkink has been demonstrated absolutely in such services as Flue Cleaning, Air Drill and Pneumatic Tool in Rock and Gypsum Quarries, Mines, Round Houses and Boiler Rooms. Also in Shafts and Tunnels, in Machine Shops, on Vessels, in excavation work and the like.

Basis of Construction

Goodyear hose is made of the finest materials throughout.

We use our own duck—made in our own mills. It must come up to our every specification.

The rubber must pass rigid tests specified by hose experts.

The hose, before ever the armor is applied, must be perfect.

Add this patent armor, and the strongest, the greatest pressure-resisting hose known, is produced.

Experiments prove that a pressure equal to 1,000 pounds will not burst Kantkink. No special couplings are necessary.

"Goodyear" Brand Steam Hose

"Goodyear" Brand is another service steam hose. It is not armored. Goodyear Steam Hose will successfully hold steam under the highest working pressures, and it will do its work faithfully under the most exacting conditions. It is the best all 'round steam hose we know of.

Goodyear Steam Hose is designed to meet and overcome the greatest degree of expansion and contraction. However sudden the application of the steam, or how high the temperature or pressure, "Godyear" Brand will handle it efficiently and without the tube hardening or cracking.



Where Goodyear Kantkink Flexible Metallic Hose was used to distinct advantage in excavation work along the Panama Canal.

The layers of special ruber and strong fabric are so thoroughly cured together that they are always one complete, durable unit.

This hose is not armored, but, if protection against abrasion is desired, the hose will be protected by a woven marline jacket.

Specify "Goodyear" Brand for the heaviest stationary duty. Its extra strength and durability mean economy.

Air Drill Hose

There are demands for lighter service hose than Kantkink.

Goodyear brands of Air-Drill Hose offer just the thing for such requirements. They afford protection against abrasive conditions, through the ply of fabric on the outside. The tube in all brands possesses exceptional oil-resisting properties. Made in the following brands:

Goodyear in duck construction, 4 or 5-ply in and 1-ply out.

Thor—Braided Ply.

Thor Brand furnished in reels of 250-foot lengths—or 500-foot, uncoupled. Goodyear in 50-foot lengths only.

Whatever your hose requirements, there is just the Goodyear brand. Simply write and tell us your working conditions and we will specify the correct hose.

Buying hose this way means satisfaction—it means continuous service without the delays.

The Goodyear Tire & Rubber Company

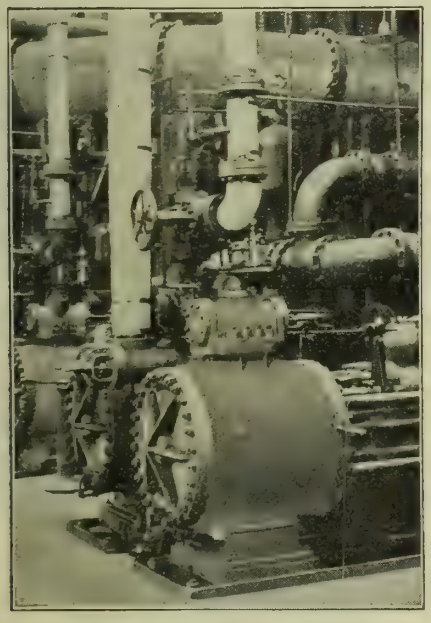
AKRON, OHIO

Branches in 65 Cities

"Everlast" Asbestos Sheet Packing

Sheet packing expense is small in comparision with coal pile expense. But remember—the **first cost** of sheet packing is not the **only** cost. Add to this the expense of lost power, lost time, lost labor—all due to faulty packing. **Real** cost of packing is larger than you think it is.

Goodyear "Everlast" Asbestos Sheet Packing is **right** from the start. It is made to overcome just the failures you find in most sheet packing.



Goodyear "Everlast" Asbestos Sheet Packing is made from heat-resisting, asbestos fibre. Has great tensile strength. Cannot burn, blow or squeeze out of a flange. Not affected by extreme temperatures.

Write us, describing exact conditions you wish to meet, and let us specify just the type you need.

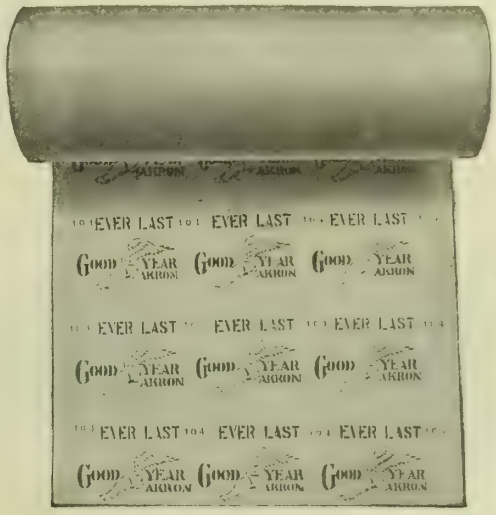
Black Oil-Proof Sheet Packing

A strong, close-grained, tough sheet, especially compounded for service under grime, ammonia, oil, naphtha, benzine, tar and syrups, also joints and cylinder heads that become saturated with hot cylinder oil. Equally durable for saturated steam—hot and cold water.

Needs no following up.

The best all-around sheet for air lines, railroad work, ice plants, creameries, distillesies, sugar refineries, cotton oil presses, oil refineries, breweries, cold storage and packing houses.

The sheet you can depend on for general service.



"Red Wing" Sheet Packing

The strongest and toughest red sheet manufactured. For all steam pressures up to 175 pounds. Will make a steam joint instantly, with no danger of blowing out.

Not affected by expansion and contraction of pipe lines. Will make a tight joint on either smooth or rough surface.

When faced with plumbago, lead, graphite, chalk or lampblack, gaskets made from "Red Wing" can easily be taken out and again replaced.

The most serviceable sheet—used by contractors, railroads, steam heating companies, plumbers and engineers on all classes of work.

Packing satisfaction and economy can only be had by buying on a **service** basis instead of **price.**

Godyear packing is made for particular needs. Simply write us and we will gladly send you samples and specify the packing that fulfills your requirements.

MULCONROY COMPANY, INC'D.

Manufacturers of

Flexible Metallic Hose, All-Metal Hose, Couplings and Boots

PHILADELPHIA NEW YORK PITTSBURGH

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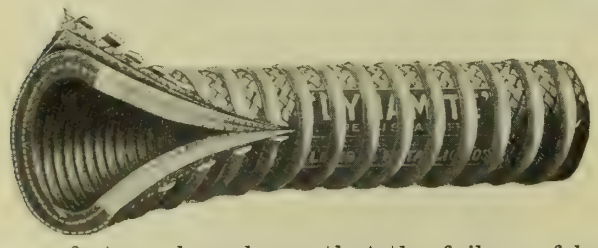
Wilkes-Barre	Eastern Penna Supply Co.	Cleveland	W. M. Pattison Supply Co.
Scranton	The Bittenbender Co.	Buffalo	W. H. H. Brown Co.
Hazleton	Jere Woodring & Co.	Detroit	J. T. Wing & Co.
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Products

Mulconroy Flexible Metallic Air, Water and Gas Hose, "Dynamite" Flexible Metallic Steam Hose, Mulconroy High-Pressure Couplings, "7-League" Sewed Leather Soled Rubber Boots, "7-League" All Rubber Chemical Boots, and Mulconroy All-Metal Hose.

"Dynamite" Flexible Metallic Steam Hose

The Best for High Pressure and Rough Usage.



Users of steam hose know that the failure of hose of ordinary construction is invariably caused by the bursting or collapsing of the tube, due to modern high pressures. This often happens before the life of the rubber is gone, and the hose has to be discarded.

The cut above shows how we have overcome this by a special spiral wire reinforcement, running through the inside of the hose, from end to end,—which keeps the tube in place until the elasticity is entirely exhausted. It also prevents injury from nipples or couplings.

The outside is protected by two jackets of braided steel wires, and an additional armor of spiral concave steel spring wire, which adds to the strength and flexibility, prevents kinking, and protects the hose against the outside abuse to which it is subjected. The wires are non-rustable, cannot crowd or shift, and will not loosen if cut.

Can also be furnished with Cotton, Marlin, Asbestos, or any other covering desired.

A Comparison

Fig. 13 shows how the tube of ordinary steam

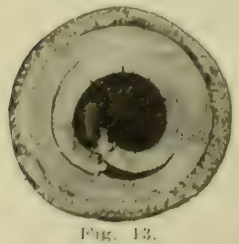


Fig. 13.



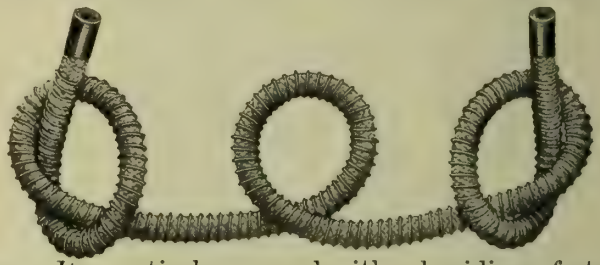
Fig. 14.

hose has buckled and broken. It gave out prematurely and had to be scrapped, although there still remained plenty of "life" or elasticity in the rubber.

In Fig. 14 is shown how the tube of "Dynamite" Hose has been kept in place intact until the life of the rubber was entirely exhausted. It wore as it should. It gave full value.

Mulconroy Flexible Metallic Air Hose

Can't kink, twist, burst, collapse or chafe. Won't injure the hands. Not an ordinary wire-wrapped



hose. It is entirely covered with a braiding of steel wires, which takes care of the internal pressure—1000 lbs. cannot burst it.

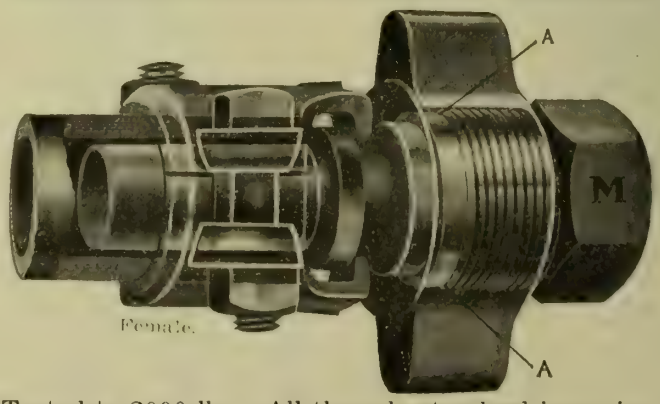
Over this is a spiral hard steel spring wire, which protects the hose against hard knocks, dragging over rough surfaces, turning sharp corners, and burning from hot rivets or plates. It also insures full capacity, because it prevents kinking, and always stays round, and therefore delivers the maximum quantity.

The tube is seamless, oil-resisting and tough. It will not peel, swell or buckle.

Also furnished with **Waterproofed Cotton** woven cover.

Mulconroy High-Pressure Couplings

The Coupling that Never Blows Off. Safe, Strong, Satisfactory, Quick Connecting, Economical.



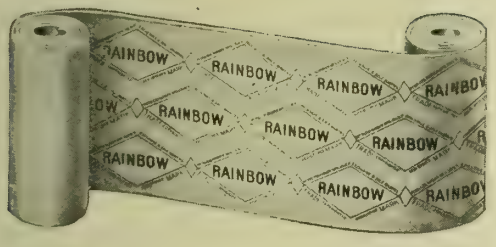
Tested to 2000 lbs. All threads standard iron pipe. Made Male and Female, ½" to 2½".

Write for Illustrated Descriptive Folder No. 34.

PEERLESS RUBBER MFG. CO.

31 Warren Street, New York

Rainbow Packing.



The original red sheet packing that flattens flanges, fills up uneven places and holds steam with grim determination. It is unequalled for steam, water and air pipes, and made as honestly today as we made it twenty-five years ago.

Rubber Pump Valves.



We have made a complete study of the rubber valve question and are prepared to furnish our "made to order" valves to meet your individual requirements from **fresh stock at same price as ordinary stock valves.**

Our Leader is the famous No. 630, which will stand the action of oil, ammonia, tar, benzine, naptha, acids, brine, grease and hot water, etc. It is the most economical valve made. We make a specialty of valves for high lift mine pumps and guarantee satisfaction.

Coke Hose.



Our "Perfected" brand of Coke Hose is of special construction, having an inner tube of best grade of rubber, over which are several plies of tightly braided yarns of cotton, into which is forced high grade friction. The plies cannot come apart unless torn piece by piece. The cover is of rubber compound to resist wear and tear. This hose has greater flexibility, strength and lightness of weight than any other hose made and is exceedingly durable.

"Perfected" brand will meet all the conditions of the coke industry.

We manufacture **Rubber Hose** of every description, also a complete line of **Rubber Belting,** including the famous "Rainbow" brand.

Samples and quotations cheerfully furnished upon request.

Send for our illustrated General Catalogue.

FOR SALE EVERYWHERE.

THERMOID RUBBER COMPANY

Factories and Main Offices

Trenton, New Jersey, U. S. A.

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Philadelphia, Pa.	Boston, Mass.	St. Louis, Mo.
Indianapolis, Ind.	New York, N. Y.	Detroit, Mich.
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Moulded in Any Shape or Furnished in Rolls of any Width or Thickness.

For Cranes, Hoists, Steam Shovels, Dredges, Tractors, Clutches, Mining Equipment, Industrial Machinery, etc.

As a chain is only as strong as its weakest link, so also is a brake or clutch only as efficient as the material composing its gripping or braking surface. The function or purpose of all brakes is fundamentally the same. Stationary bands, shoes, blocks, etc., come into contact with some revolving part of the mechanism, and the friction or gripping of the brake retards the motion. Brakes or clutches are but other names for safety. Their efficiency, at any cost, must never be jeopardized. Wood, leather, metal, fiber-board, canvas belting, etc., for this purpose are rapidly becoming obsolete.



Not Affected by Heat, Oil or Gasoline.

Ten years of practical tests on every known class of machinery using brake lining has proven that Thermoid Hydraulic Compressed Brake Lining is the most efficient and outwears any brake lining, foreign or domestic, or any other brake material.

It is constructed of pure Canadian asbestos, interwoven and reinforced with brass wire and impregnated with a compound which adds great strength, durability and gripping power, and which makes the lining impervious to oil, water, gasoline, grease or dirt, and any heat to which it will ever be subjected in service. It is cured under 2,000 pounds pressure and extra high heat, and will not swell, burn out or dry out and get brittle. The hydraulic compression causes it to retain its full gripping or braking power, and it is not to be compared with a stringy, loosely-woven lining which has the friction or gripping qualities only on the surface.

Thermoid Hydraulic Compressed Brake Lining is flexible and conforms readily to the shape, and is easily fitted to brake band or drum, presenting a smooth, uniform wearing surface.

Asbestos Brake Blocks.

Thermoid Asbestos Brake Blocks are made any shape from special moulds and will accurately fit any style of machine. Composed of Canadian fibre asbestos, interwoven with brass wire impregnated with heat-proof friction compound, compressed and cured under 2,000 pounds hydraulic pressure, giving the same advantages enjoyed by our Hydraulic Compressed Brake Lining, such as being heat proof and not affected by oil, water, gasoline, dirt, etc. Will outlast many sets of ordinary blocks or bands of any other material. Made in any width, thickness, design or shape.

Unreliable brake lining is a deadly peril—Safety First.

GUARANTEE—Thermoid Brake Lining will make good or we will.

Inquiries solicited. Samples on request.

We want one good salesman, specializing on the mining trade, in each mining territory.

PITTSBURGH WHITE METAL CO.

3116 Penn Ave., Pittsburgh, Pa. 160 Leroy St, New York City

Manufacturers of

"RINEHART" Babbit and Solder Metals

Quality Products of Experience

Products

Babbitt and solder metals. Lead pipe, sheet lead, wire solders, or any lead shapes made by hydraulic pressure.

"Rinehart" Babbitt Metals

Highest efficiency and lowest cost, by the continued use of our babbitts.



Not one formula that we claim is capable of all kinds of work, but—

Perfected mixes to meet specific requirements.

Let us suggest a grade of "RINEHART" babbitt that will insure 100% service at lowest initial cost. Let us have your requirements.

We are supplying quite a number of mines with the following grades:

"RINEHART" Genuine A-1 Hard.
"RINEHART" Standard.
"RINEHART" Metric.
"RINEHART" Triple X.

The grade known as Genuine A-1 Hard is, without question, the best babbitt on the market today —a tin based metal free from lead—adapted especially for high speed and heavy duty work. The other grades go lower in tin, with lead substituted in proportion as it is decreased.

Prices are based on the markets of the day, and are always consistently low, combined with high quality of manufacture.

"Rinehart" Solders

They are instantly recognized as the better kind of solders by every user. Made from the best of virgin materials obtainable, and correctly mixed in given percentages. Made in three stock grades and marked as follows:

"RINEHART" A-1 (strictly 50x50).
"RINEHART" 1 (strictly 48x52).
"RINEHART" 11 (strictly 45x55).

Wire Solders

Made in the three grades named above—with the same "know-how" that has made our bar solders distinctively better. Any gauge you want.

We are prepared to make solders in either bar or wire form, to your own formula.

Lead Pipe, Sheet Lead, Etc.

If at any time you have occasion to need material of this nature, we can guarantee our products to be the best made. Anything of lead that can be made by hydraulic pressure.

Special

Quite a number of concerns specify their own formula on babbitt metals. We can figure with you—in case you specify your own percentages.

QUALITY FIRST AND ALWAYS.

GEM MANUFACTURING CO.

Offices & Works Pittsburgh, Pa.

Manufacturers of

GEM GUARANTEE GOODS

Products

Hand Oilers, Steel Brass Oilers, Heavy Brazed Steel Oilers, Cadgers
Mine and Pit Car Oilers
Fillers
Tallow Pits
Grease Buckets
Oil Cans
Shop Torches
Flue Scrapers
Locomotive Oilers
Flexible Shafting and Attachments
Counter Shafts
Breast Drills and Drill Presses
Universal Joints
Portable Grinders and Drills, Motor or Rope Drive for Special Mine Work.

We make a specialty of Rush Orders for machine work.

MR. MINE SUPERINTENDENT OR PURCHASING AGENT, upon request, we will send you Catalogue No. 8, giving complete description of the above mentioned products, also samples of Brazed Seam Oilers, Torches and Oil Cans free of charge.

BRAZED SEAM GOODS are economical, because of their durable construction. To braze our products, it takes 1800 degrees of heat, whereas the ordinary solf-soldered competitve goods are soldered at 350 degrees heat.

Brazed Seam goods can be heated to a red heat without causing them to leak. Although the initial cost of Brazed Seam goods is a little higher, in the end they are the most economical. One Brazed Seam Oiler, Torch, or any other Brazed Seam article, will last from five to ten times longer than the ordinary competitive article.

Heavy Brazed Steel Tallow Pots

No. List Pr.per doz.
45 H. 1-qt. Tallow Pot..$13.00
47 H. 2-qt. Tallow Pot.. 15.00
48 H. 3-qt. Tallow Pot.. 17.00
49 H. 4-qt. Tal low Pot.. 18.00
With Strainers, extra 2.50

Are so constructed that strainers are removable.

You cannot injure these Tallow Pots by placing them on a fire to heat the tallow.



Heavy Brazed Steel Oil Carriers



Screw Top		List Price, Each
No. 60 H.	1-gallon Carrier	$2.00
No. 61 H.	2-gallon Carrier	2.50
No. 62 H.	3-gallon Carrier	3.00
No. 63 H.	4-gallon Carrier	3.50
No. 64 H.	5-gallon Carrier	4.00
With Strainer, extra		.25

Are so constructed that Strainers are removable.

Any capacity of larger sizes made to order.

Very heavy steel.
Extra heavy bail and lugs.
Seams hard spelter brazed.
For factory and railway use.
It is perfectly safe for storage.

Heavy Brazed Steel Pyramid Torches

List Price, Per doz.
No. 80 H. ½-pt. 1 burner Pyrmid Torch ....$ 7.00
No. 81 H. 1-pt. 1 burner Pyramid Torch 9.00
No. 82 H. 1-qt. 1 burner Pyramid Torch 10.00
No. 83 H. 1-qt. 2 burner Pyramid Torch 11.00
No. 84 H. 2-qt. 1 burner Pyramid Torch 12.00

You cannot secure a stronger Torch than those we manufacture.

Guaranteed not to leak.
Seams heavy spelter brazed.
Extra heavy handle, securely riveted .
Drawn steel tops
For factories, foundries, rolling mills, blast furnaces, construction work, is a stout, durable Torch.



Gem Plain Brazed Steel Bench Oilers

Tempered Steel Bottoms

	Capacity	Spout	Diam.	List Price Per doz.
No. 1603.	⅓ pt.	3 in.	3⅜ in.	$4.75
No. 1604.	⅓ pt.	4 in.	3⅜ in.	5.00
No. 1606.	⅓ pt.	6 in.	3⅜ in.	5.50
No. 1609.	⅓ pt.	9 in.	3⅜ in.	6.00
No. 1703.	½ pt.	3 in.	3¾ in.	5.75
No. 1704.	½ pt.	4 in.	3¾ in.	6.00
No. 1709.	½ pt.	6 in.	3¾ in.	6.50
No. 1709.	½ pt.	9 in.	3¾ in.	7.00
No. 1803.	¾ pt.	3 in.	4⅛ in.	6.75
No. 1804.	¾ pt.	4 in.	4⅛ in.	7.00
No. 1806.	¾ pt.	6 in.	4⅛ in.	7.50
No. 1809.	¾ pt.	9 in.	4⅛ in.	8.00
No. 1903.	1 pt.	3 in.	4½ in.	7.75
No. 1904.	1 pt.	4 in.	4½ in.	8.00
No. 1906.	1 pt.	6 in.	4½ in.	8.50
No. 1909.	1 pt.	9 in.	4½ in.	9.00



The 6 and 9 inch spouts are furnished bent unless otherwise ordered.

Oilers are made of No. 20 B. & S. gauge COLD ROLLED STEEL. All highly polished. GUARANTEED.

Bushings of solid brass castings, machine cut.
Leather washers are cut from split sides.
All lengths of spouts are interchangeable.
Oilers copper or nickel plated to order.



Gem Steel Cadger

A strong and durable carrier for miners' reserve oil supply. Made of heavy cold rolled steel, with double rolled side seam spelter brazed. Heavy tapered spout, spelter brazed to body of can, with tapered cap of same gauge, making tight joint without screw thread.

Cap easily removed.

Practically indestructible.

Will outlast half a dozen ordinary tin Cadgers, and costs but little more than one.

Fits the pocket.

Always with you.

½-pt., per gross, list price....$36.00

Heavy Brazed Steel Mammoth Or Pit Car Oilers

List price
No. 36 H. 1-qt. Pit Car Oiler, 8 in. spout, $16.00
No. 37 H. 2-qt. Pit Car Oiler, 10 in. spout, 18.00
No. 38 H. 3-qt. Pit Car Oiler, 12 in. spout, 21.00
No. 39 H. 4-qt. Pit Car Oiler, 12 in. spout, 24.00

All spouts furnished straight unless ordered bent.

Any length spout, straight or bent. Sizes all interchangeable. Large opening for heavy oils.

EXTRA NOZZLES

Length, inches	8	10	12	18
Price, per dozen	$2.75	3.00	3.25	3.50

Guaranteed not to leak. Seams hard spelter brazed.

Do not compare the above goods with the ordinary soft soldered, light steel or tin oilers.



Write for Discounts.

THE ATLANTIC REFINING COMPANY

Largest Manufacturers of

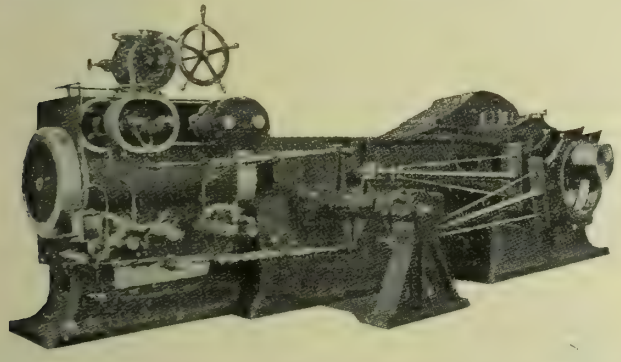
Lubricating Oils & Greases in the World

Philadelphia Pittsburgh

We sell LUBRICATION—and maintain a machanical Department wihch is always at your service with no additional cost We manufacture and sell direct to the trade every kind of lubricating oil and grease made from Petroleum and list a few of our standard trade-mark brands

CAPITOL CYLINDER OIL

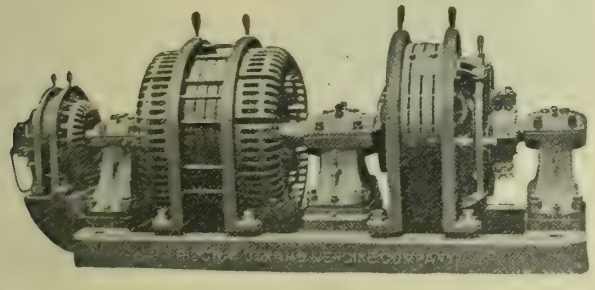
For years the acknowledged standard for durability and power-saving properties. It is a compounded oil, dark in



color and is adapted for the lubrication of large, heavy engines and steam pumps

ATLANTIC RED ENGINE OIL

This red colored oil has been in the market for years, and for general external lubrication of all classes of machin-



ery and shafting has no equal

Its steady increased sales testify to its splendid satisfying power of lubrication

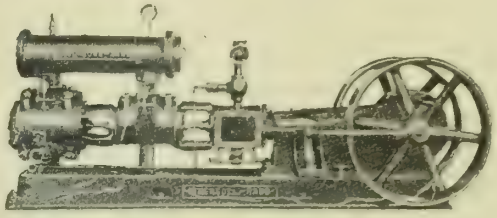
ARGON COMPRESSOR OIL

An amber colored oil, possessing high flash point, and of exceptionally high lubricating properties

Recommended for use where compression is extremely high

ARIO COMPRESSOR OIL

A pale colored oil, thinner in body than the Argon Compressor, and is recommended where the compression does not exceed 125 pounds per square inch



PREMIER TURBINE OIL

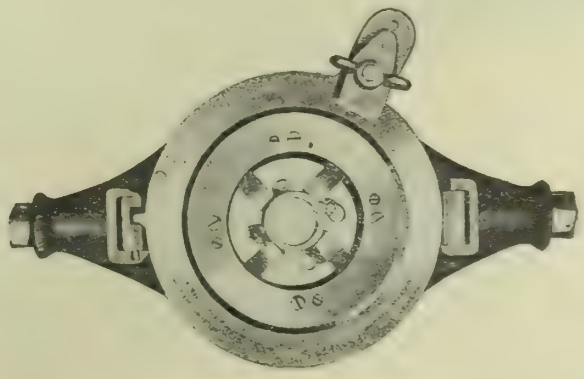
A pure mineral oil, of pale color, entirely free from



tarry, slimy or saponifiable matter. Contains no acid, soaps or thickeners Unexcelled for turbine lubrication.

UNION THREAD CUTTING OIL

This oil is offered in place of Lard Oil for thread cutting purposes, and has proven its worth wherever tried.



This oil results in a clean cut thread, and keeps the dies in first class condition. We recommend it for all thread and bolt cutting purposes.

KEYSTONE LUBRICATING CO.

Manufacturers of Petroleum Lubricants

21st., Lippincott and Clearfield Streets,
PHILADELPHIA, PA.
ESTABLISHED 1884.

BRANCHES, OFFICES AND WAREHOUSES:

NEW YORK	1777 Broadway	BOSTON	Oliver Building
CHICAGO	2132 Michigan Avenue	DENVER	First National Bank Building
NEW ORLEANS	609-15 Chartres Street	SAN FRANCISCO	268 Market Street
PITTSBURGH	Jenkins Arcade	SAVANNAH	141 Drayton Street

The principal branch office for the bituminous coal fields is located in the Jenkins Arcade, Pittsburgh, Pa., where extensive Sales and Mechanical Engineering Departments are equipped to render valuable service to the coal mining industry.

Agencies in the Principal Countries Throughout the World

Products

Keystone Grease (several densities), Keystone Wool Yarn Grease, Keystone Turbine Oil, Keystone Cylinder Oil, Keystone Motor Oil, Keystone Gas Engine Oil, Velox Gear Grease, Keystone Wire Cable and Manila Rope Greases. Keystone Grease is made in different densities for various uses and is suitable for use on every type of machinery, whether light or heavy, high- or low-speed. It will not change consistency under either ordinary or extremely severe working loads and temperatures. The same density is used both summer and winter, since it is not affected by atmospheric changes of heat or cold.

Keystone Grease possesses the much-desired clinging quality that oils and animal oil greases lack. It tends naturally to stay in the bearings and will keep them cool at extremely severe as well as moderate loads. Keystone Grease does not soften and cannot be fed exactly as are animal oil greases. If a heavy density is forced into the bearings under pressure,—such as feeding through spring automatic or hand compression cups, it forces out grease which would otherwise stay in the bearing indefinitely. Care should therefore be exercised and the grease applied sparingly, for a little Keystone Grease goes a long ways.

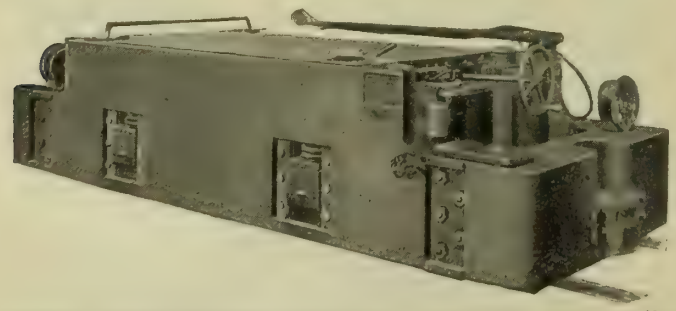
PROFITABLE LUBRICATION OF MINING MACHINERY.

Lubrication of Electric Mine Locomotives

On electric mine locomotives use Keystone Grease in cups and Keystone Wool Yarn Grease and Keystone Wool Yarn Elastic Grease in journal boxes and in open hub wheels.

Most greases depend upon frictional heat to cause them to flow to the bearings. Consequently when sufficient heat is generated to cause them to feed, they have the consistency of oil and run out of the bearings as rapidly as oil—leaving only the artificial body behind.

This body is often dangerously friction-producing and hot boxes usually result unless there are additional quantities of grease administered.



General Electric Haulage Locomotive. A type very successfully lubricated with Keystone Grease.

Keystone Grease on the contrary always has the same consistency regardless of atmospheric conditions, and furnishes a constant film of lubricant to the journal and bearing to which it is applied.

It does not depend upon friction to cause it to feed, and the lubrication is constant from the instant the journal begins movement.

Under such lubricating conditions bearings wear indefinitely longer, and not only effect material saving in cost of upkeep and service, but the actual cost of lubrication is materially reduced.

Lubrication of Coal Cutting Machines

There is probably no other type of mining machine on which Keystone Grease so strikingly demonstrates its efficiency.

Since it does not creep or "hunt," none of the lubricant can work onto the mica of commutator and armature windings and all "blowouts" from this cause are positively avoided.

Used on the cutting chains, No. 119 Keystone Grease will double their average life. The method of application is easy and simple but decidedly efficient.



A Morgan-Gardner Shortwall Cutter—Lubricated entirely with No. 119 Keystone Grease.

No. 119 is applied to the chain joints while the chain is running idle at the slowest possible speed. The chain should be allowed to run a number of revolutions to allow the lubricant to work in.

If this is done morning and noon, most of the dust will be kept out of the joints and the chain will have the lubrication it needs for long and productive cutting service.

No. 119 Keystone Grease should be used on all except armature bearings of the Goodman, Sullivan and Jeffrey cutting machines, while No. 1 Keystone Grease in Hobart Cups should be used on the armatures.

The Morgan-Gardner Cutting machine is lubricated throughout with No. 119 Keystone Grease.

Lubrication of Air Compressor Cylinders

Number Six Keystone Grease in air compressors will not only effect a material saving in power and cost of lubrication, but will reduce the necessity for repairs and the attendant "shut-downs."

It can be fed satisfactorily through the regular air-cylinder lubricators, but when first using it, it is necessary to feed rather freely until the cylinder is thoroughly lubricated, then reduce to one drop every one or two minutes.

Number Six Keystone Grease is also recommended for the lubrication of moving parts operated by compressed air, such as mining machinery, compressed air locomotives, drills, riveters, etc.

If used in the stuffing boxes through which the piston rod passes it will act as a preservative for the packing, and repacking will be necessary only every five or six months instead of every two or three weeks, as when oil is used.

Lubrication of Punchers

Pneumatic Coal Punchers can be most successfully lubricated with No. 119 Keystone Grease (Light) in the gear cases, and No. 6 Keystone Grease in the air cylinders.

Ingersoll, Sullivan or Harrison air punchers are perfectly lubricated with a small quantity of No. 6 Keystone Grease, applied daily.

Sheave Lubrication

On sheave wheels, where rope haulage is used, No. 1 Keystone Grease in Cups, will give most efficient lubrication and an ounce of Keystone will run a sheave with a 3 inch bore a full week and save a man's time making daily applications where oil is used.

Turbine Lubrication

Keystone Turbine Oil is expressly prepared for turbine lubrication. It may be depended on to reduce the temperature of the bearings materially and to last at least twice as long as any of the oils usually used for this purpose.

It is not subject to foaming under most severe service conditions, and maintains its viscosity and lubricating efficiency considerably longer than is expected of ordinary oils used for the same purpose.

Wire Cable and Manila Rope Transmission Lubrication

To be suitable for cable use a lubricant must have the property of staying where it is put,—must protect the cable from water or dampness in any form, and from the chemicals with which the water may be charged. It must be free from any material that will harm the cable, whether wire or manilla, and must, itself, remain soft and pliable, not subject to evaporation.

Keystone Wire Cable Grease and Keystone Manila Rope Transmission Grease are not affected by extreme atmospheric conditions of heat and cold.

They possess great adhesive properties and cannot be thrown off by centrifugal force.

Are unaffected by water, whether charged with sulphur or any other chemicals encountered in mines.

They will penetrate to the heart of the cable in a very short period after application, preserving the core, furnishing internal lubrication between the strands, and doubling the life of the cable.

Gear Lubrication

Keystone Velox Gear Grease is made in nine different densities to suit different requirements.

It has great co-hesive and adhesive qualities, and will never become brittle nor fall off the gears. It is not affected by immersion in water nor by atmospheric temperature changes.

In selecting gear grease the proper density is determined by the speed of the gears—the faster the speed the lighter the grease.

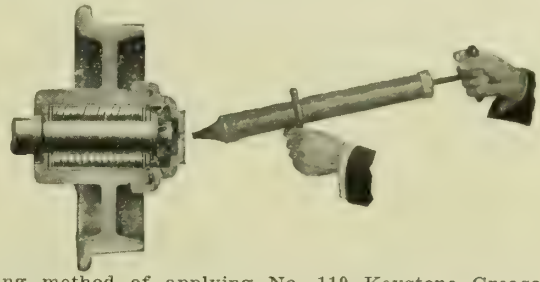
Lubrication of Mine Car Wheels
Keystone Grease No. 119.

The axle of a cavity type mine car wheel receives its supply of lubricant through a slot or opening in the wheel leading from the reservoir cavity.

The lubricant must be of such fluid consistency as will permit it to feed through these openings when the car is at rest.

If the lubricant is too fluid and does not have the proper body or viscosity it will work out rapidly when the wheel is in motion, and unless very frequently applied will leave the wheel dry—subject to increased friction in proportion to the load carried.

No. 119 Keystone Grease for mine car wheels has an unusual lubricating body, far superior to any oil, and will positively maintain its semi-fluid consistency even under extreme conditions of heat or cold. It possesses just that semi-solid consistency and the viscosity necessary to feed properly through the oil channels when the car is at rest and yet will positively not work out when in motion. It can also be used most satisfactorily in roller bearing wheels.



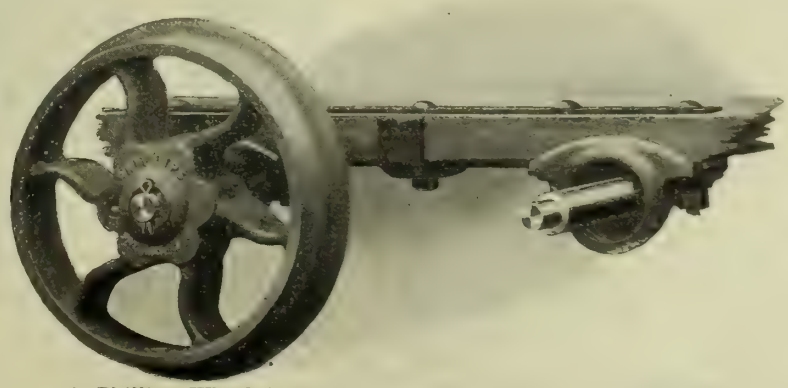
Showing method of applying No. 119 Keystone Grease to a Hyatt Roller Bearing mine car wheel, using a Keystone Grease Gun.

The experience of several of the largest operators has shown that the loss by worn-out wheels and axles is reduced from 50 to 80 per cent where No. 119 Keystone Grease is used, **and this saving is considerably greater than the entire cost of lubrication.**

One large operator has saved in ten months over $10,000 in decreased wear and tear on mine car wheels and axles.

In addition, a saving is apparent from the fact that No. 119 Keystone Grease will not leak and waste as will oil, and there is a further saving by a reduction in labor required to keep the cars lubricated. No matter how strongly mine water is impregnated with sulphur, it cannot harm a metal surface coated with Keystone Grease, which is a natural preservative of metals.

In wheels with journal boxes Keystone Wool Yarn Grease may be used with equal efficiency. In solid roller bearing wheels No. 2 Keystone Grease is wonderfully efficient both in length and kind of lubricating service delivered.



A Phillips Wheel in Which No. 119 Keystone Grease works perfectly for months at a time, without attention.

THE OHIO GREASE COMPANY

Main Office and Works,
510 to 520 North Spring St.,
LOUDONVILLE, OHIO

Manufacturers of

The Ohio Brand of Lubricating Greases

Warehouses at

Philadelphia, Pa. Pittsburgh, Pa. Richmond, Va. Louisville, Ky. Memphis, Tenn., St. Louis, Mo. Kansas City, Mo. San Francisco, Cal.

Products

Cylinder Grease, Cup Grease, Fibre Grease, Bearing Grease, Shafting Grease, Journal Grease, Transmission Grease, Auto Grease, Rope Grease, Gear Grease, and Commutator Compound; also Grease Cylinder Lubricators, Compression Cups, and Steel Shafting Cups.

Ohio Cylinder Grease

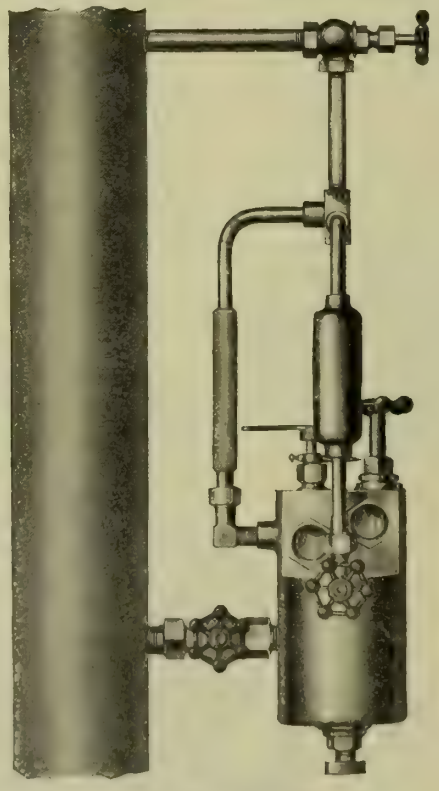
consists of the highest obtainable grade of Pennsylvania Cylinder Stock scientifically compounded with Acidless Tallow Oil, and highly concentrated. It contains no Neutral Oils, Degras, or anything else that would tend to cheapen it or weaken it in any way.

It is a pure, acidless lubricant of great viscosity and fire test, and each particle retains its viscosity and lubricating qualities until it is entirely consumed. It is therefore dependable and efficient at any pressure, and under all conditions; and positively will not carbonize, or leave a residue of any kind to gum cylinders or valves.

Grease Cylinder Lubricators

Ohio Cylinder Grease is too heavy to be fed by ordinary lubricators, and too valuable to be wasted. Therefore we supply, and keep in perfect repair without charge, a sufficient number of especially designed lubricators to fully equip any plant using this grease.

These instruments havebeen repeatedly improved until now they stand far in advance of any other lubricating device on the market. They are made of brass in both the up feed and drop feed pattern, beautifully finished in polished nickel, and come in three sizes.



The Ohio Grease Lubricator
Class D.

What This System Accomplishes.

These wonderful instruments atomize each drop of grease as it is being fed, thoroughly mixing it with the steam before it enters the cylinder. This enables the steam to deposit a thin, uniform film or veneer on all parts of valves, cylinder, etc. Very little grease is required for perfect lubrication, and there is no waste to contaminate the exhaust. As a result, you save at least 25% on oil costs and get much better lubrication. Packing lasts longer, all units run easier and smoother, and there is no oil in the boilers. Wear and tear is reduced to a minimum, and you save power and coal.

Read This Test Offer

To prove that our system will do all this for you, we will send you, prepaid, one or more lubricators and sufficient grease for a thorough test. If this test does not prove satisfactory in every respect no charge whatever will be made, and you may return the lubricators at our expense. On the other hand, if the test does prove satisfactory we will charge for the grease used therein at the barrel rate.

If you wish to continue using our system you may keep the lubricators you then have; and any additional ones you may need will be furnished and kept in repair absolutely free. Our only requirement is that you feed nothing whatever through any of these lubricators but Ohio Cylinder Grease. Should you at any time wish to stop using this grease, simply return the lubricators to us. We have no claim whatever on your trade except the efficiency of our system. Write for prices and further particulars.

Ohio Cup Grease

An excellent lubricant for all kinds of machinery bearings, conveyors, etc. It contains no acids, graphite or mica, and nothing whatever enters into its composition that would in any way injure the bearing on which it is used.

Each and every atom is a lubricant of the first quality. Therefore no gum, or residue of any kind is found in the cup, or on the bearing, after its use. It has been tested against all of the well known bearing greases, and has given more satisfactory results in every instance.

This grease is made in six consistencies ranging from very soft to very hard. These are known as 1-0, 2-0, 3-0, 4-0, 5-0, 6-0, and are sold at the following prices F. O. B. our factory:

Barrels . .	containing about	380	lbs.	@	10c per lb.
Half bbls.	" "	225	lbs.	@	11c per lb.
Kegs	" "	110	lbs.	@	12c per lb.
50 lb. cans				@	13c per lb.
25 lb. cans				@	14c per lb.
10 lb. cans				@	15c per lb.

Ohio Commutator Compound

Will keep your dynamos and motors in first class condition, and prevent all trouble from sparking. Let us send a sample to prove it.

2 oz. box 25c, ½ lb. box 75c, 1 lb. box $1.25.

Liberal samples on request.

Ohio Fibre Grease

A very high melting point grease of a spongy or fibrous nature. These properties enable it to stay where it is put, though the temperature be high, and to outwear ordinary cup or bearing grease. It is extensively used in mills, coal mines and other places where the service is severe.

It is a fine grease for use in hot places, the heavier consistencies having a melting point of from 400° to 450° F.

This grease is made in six consistencies known as No. 1, No. 2, No. 3, No. 4, No. 5 and No. 6. All sell at the folowing prices F. O. B. our factory:

Barrels . .	containing about	380	lbs.	@	12c per lb.
Half bbls.	" "	225	lbs.	@	13c per lb.
Kegs	" "	110	lbs.	@	14c per lb.
50 lb. cans				@	15c per lb.
25 lb. cans				@	16c per lb.
10 lb. cans				@	17c per lb.

Liberal samples on request.

Ohio Journal Grease

A superior mineral lubricant for Mine Cars, Electric Cars and Railway Cars. Also for ball and roller bearing axles or journals of all kinds; trolley wheels, elevator worm wells, etc.

It does not become rancid with age, gum, or leave a deposit of any kind. Its exceptional lubricating and lasting qualities enable our customers to get much better lubrication at an enormous reduction on the cost of oil, and on the labor of applying it.

It is made in two colors, called Light and Dark, and there are three consistencies of each color. These are designated by the letters A, B, C; A being the thinnest in each case. All are sold at the following prices F. O. B. our factory:

Barrels . .	containing about	380	lbs.	@	10c per lb.
Half bbls.	" "	225	lbs.	@	11c per lb.
Kegs	" "	110	lbs.	@	12c per lb.

Not sold in smaller packages.

Liberal samples on request.

Ohio Rope Grease

A high grade lubricant for wire ropes or cables. Especially adapted for use on hoisting and haulage ropes. It is made of the best obtainable materials including Pennsylvania cylinder stock and finely powdered lubricating graphite. It contains no soda, lime, potash or soap, and therefore successfully resists the action of mineralized mine water.

It works its way right in to the center of each strand, thoroughly lubricates every wire, eliminates internal friction and prevents rusting. This, of course, materially prolongs the life of the rope, thus effecting great economy.

It is sold at the following prices F. O. B. factory:

Barrels . .	containing about	380	lbs.	@	12c per lb.
Half bbls.	" "	225	lbs.	@	13c per lb.
Kegs	" "	110	lbs.	@	14c per lb.
50 lb. cans				@	15c per lb.

Not sold in smaller packages.

Liberal samples on request.

Ohio Gear Grease

A first class lubricant for exposed gears, not running in cases or housings. It is not effected by the weather, and will not wash off. Neither will it harden and fill up the meshes, or get brittle, crack and drop off. It simply stays where it is put, and does good work under all conditions. Made in three consistencies, and sells at the same prices as Rope Grease.



VENTILATING SECTION

Engineering Data

Ventilating Formulae.
Water Gauge Chart.
Humidity of Air measured by the Hygrometer.
Humidity Table.
Information or Specification Data.
Orifice Water Gauges.
Air Power Chart.
Mine Resistance Tables.
Air Friction in Circular Shafts.

The following manufacturers have catalogue descriptions in this section:

American Blower Co.
Fulton Bag & Cotton Mills.
General Electric Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Robinson Ventilating Co.

For additional descriptions of Ventilating Equipment not appearing in this section refer to Index of Products in front of the book.

Information Needed When Ordering Mine Fans

Inquiries, or requests for estimates, should, so far as possible, contain the following information:

1. The maximum volume of air required.
2. Against what water gauge will it be delivered.
3. The type of fan required, whether Blowing, Exhaust, Blowing Reversible, or Exhaust Reversible.
4. Whether the fan is to be driven by an engine or motor, and if by the former, give steam pressure and approximate length of steam line; if driven by a motor, state whether the current is direct or alternating, and give voltage phase and number of alternations.
5. Whether the airway is a shaft or a drift. If the former, give dimensions inside of timbers at its top, and if the latter, give sectional dimensions at entrance.
6. Whether the mine is new or old, and if it is old, give the volume of air now obtained, and water gauge.
7. Whether the drive is to be placed on right or left-hand side of the fan facing the mine.
8. Whether you prefer a double or single intake fan.
9. Whether quotations on complete equipment or on fan alone, without engine or motor are required.

Drawing showing the general layout of your mine, location of fan and any other information which might assist in determining the fan best adapted to your special requirements.

Ventilating Formulae

The information contained in the following formulae will be found convenient for reference by mine engineers and operators who have ventilating problems under consideration:

I. The volume of air delivered by a mine ventilating fan varies directly as the number of revolutions. That is, a fan running 80 R. P. M. delivers 100,000 cubic feet. How much air will this fan deliver at 160? Solving the proportion: $80 : 160 :: 100{,}000 : X$, we have $X = 200{,}000$ cubic feet.

II. The water gauge or pressure produced by a fan varies directly as the square of the speed. If a fan is running 80 R. P. M. and produces 1" water gauge, what pressure will it produce at 160 R. P. M.? Stating the proportion thus: $(80)^2 : (160)^2 :: 1'' : X$, we have $X = 4''$ water gauge.

III. The water gauge or pressure required to force air through a mine varies directly as the square of volumes. If a mine is passing 100,000 cubic feet at one inch gauge, what pressure will be required to pass 200,000 cubic feet? From the following proportion: $(100{,}000)^2 : (200{,}000)^2 :: 1 : X$, we have $X = 4''$ water gauge.

IV. The power required to drive a fan varies directly as the cube of the number of revolutions. If a fan is running 80 R. P. M. and requires 25 H. P. to drive it, what power will be required to drive the fan at 160 R. P. M.? Stating the proportion thus: $(80)^3 : (160)^3 :: 25 : X$, we have $X = 200$ H. P.

V. The power required to ventilate a mine varies as the cube of the volumes of air passing. If it requires 25 H. P. to circulate 100,000 cubic feet of air through a mine, what H. P. will be required to pass 200,000 cubic feet? Solving the proportion: $(100{,}000)^3 : (200{,}000)^3 :: 25 : X$, we have $X = 200$ H. P.

VI. To find the actual H. P. in air delivered by a ventilating fan: Multiply the number of cubic feet of air delivered per minute by the water gauge and divide the product by 6345. If a fan is delivering 100,000 cubic feet against 2" water gauge, what is the actual H. P output of the fan? Solution: $\frac{100{,}000 \times 2''}{6345} = 31.5$ H. P.

VII. To find the size of motor or engine required to drive a fan under average mine conditions: Multiply the number of cubic feet of air by the water gauge and divide this product by 4500. If a fan is delivering 100,000 cubic feet of air at 2" water gauge, what size motor or engine will be required to drive it? Solution: $\frac{100{,}000 \times 2''}{4500} = 44.4$ H. P

VIII. The indicated horse power of an engine is found from the following formula:

$$\frac{P\text{-}L\text{-}A\text{-}N}{33000}$$

Where P = Mean effective pressure.
L = Length of stroke in feet
A = Area of piston in sq. inches.
N = Number of revolutions multiplied by 2.

Example: If a 16" x 18" engine is running 150 R. P. M. and the mean effective pressure is found by the indicator to be 40 lbs., what is the H. P.? Substituting in above formula: $\frac{40 \text{ lbs.} \times 1\frac{1}{2} \times 201 \times 300}{33000} = 109.6$ H. P

Courtesy Jeffrey M'f'g Co.

IX. The electrical H. P. consumed by direct current motor is found from the following formula:

$$\frac{V \times A}{746}$$

Where V = Volts.
A = Amperes.
746 = Number of watts in one H. P.

Example: A direct current motor is using 250 volts, 100 amperes, what is the H. P. consumed? Substituting in above: $\frac{250 \times 100}{746} = 33.5$ H. P.

X. The mechanical efficiency of a ventilating equipment is the ratio of the actual H. P. output to the actual H. P. input. In example VI the actual H. P. output is 31.5, and in example VII the actual H. P. input is 44.4; and dividing the output by the input, we have $31.5 \div 44.4 = 71\%$ mechanical efficiency of equipment.

XI. The theoretical water gauge of a fan is computed from the following formula:

$$\frac{V^2 \times .078}{32.2 \times 5.2}$$

Where V = peripheral speed of fan in feet per sec.
32.2 = g. acceleration due to gravity.
.078 = weight of cubic foot of air.
5.2 = pressure per square foot for 1" water gauge.

If a fan is running at 80⅓ feet peripheral speed per second, we have

$$\frac{(80\frac{1}{3})^2 \times .078}{32.2 \times 5.2} = 3''$$ theoretical gauge.

XII. Manometric efficiency is the ratio of the theoretical water gauge to the actual water gauge developed by a fan. If a fan running at a peripheral speed of 4820 feet per minute (80⅓ feet per second) produces an actual water gauge of 2", what is its manometric efficiency? We find by example XII the theoretical gauge is 3", and dividing the actual gauge by the theoretical gauge, we have $2'' \div 3'' = 66\frac{2}{3}\%$ manometric efficiency.

XIII. Volumetric capacity of a fan is the ratio of the actual volume produced to the cubical contents of the fan multiplied by number of revolutions. The cubical contents of a fan 10' diameter, 5' wide, is 392 cubic feet, and running at 100 R. P. M. = 39,200. If we find the actual volume delivered by the fan to be 78,400, we have $78{,}400 \div 39{,}200 = 200\%$ volumetric capacity.

XIV. The pressure or water gauge required to force air through a mine may be obtained by multiplying the total rubbing surface by the square of velocity of air and a co-efficient of friction (.000,000,005), and dividing the product by 5.2 times the sectional area.

A mine has 208,000 square feet rubbing surface, a sectional area of 100 square feet and 100,000 cubic feet of air is required per minute, what is the water gauge?

Solution: $\frac{208{,}000 \times (1{,}000)^2 \times .000{,}000{,}005}{100 \times 5.2} = 2''$

Note.—The co-efficient of friction may vary in ratio of from 1 to 7 on different mines, and it is a very uncertain quantity.

Every precaution should be taken to keep large airways, and it is best to assume that no mine should be permitted to get into a condition requiring over three inches water gauge pressure to ventilate it on every day duty.

Humidity of Mine Air Measured by The Hygrometer

What the Wet-and-Dry-Bulb Hygrometer Indicates—

The wet-and-dry-bulb hygrometer shows the difference between the readings of the two thermometers. The dry-bulb thermometer, of course, indicates the actual temperature of the air. The reading of the wet-bulb thermometer is lowered by the evaporation of the water from the little sack surrounding this bulb, and which is kept moist by the water drawn up through the wick from the vessel below.

The difference of temperature indicated by these two thermometers depends on the rapidity of the evaporation of the water from the wet bulb. The evaporation is more rapid in dry than in wet air; and the difference of reading is, thus, an index or measure of the degree of saturation of the air. When the air is fully saturated with moisture there is no evaporation from the wet bulb and the readings of the two thermometers are the same. The difference increases with the dryness of the air.

Relative Humidity of Air—As previously explained the relative humidity of air is expressed by the ratio of the actual vapor pressure in the air at the time, to the saturated vapor pressure. The following table gives the percentage of saturation or the hygrometric state of air for various differences of readings, at different temperatures.

To use the table, find the observed temperature of the air, in the left-hand column, and the difference of the observed readings of the wet-and-dry-bulb thermometers, at the top of the table; the corresponding number in the table is the percentage of saturation which expresses the degree of humidity of the air. For example, if the dry-bulb temperature is 70 deg. and the wet-bulb 64 deg. F. the difference of readings is 6 deg. and the corresponding humidity as taken from the above table is 72 per cent.

Difference Between Dry and Wet Bulb

Reading of dry bulb ther. Degrees	Degrees 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	17.5	18	18.5	19	19.5	20	20.5	21
	Relative Humidity																								
65	95	90	85	80	75	70	66	62	57	53	48	44	40	36	32	28	25	23	21	19	17	15	13	12	10
66	95	90	85	80	76	71	66	62	58	53	49	45	41	37	33	29	26	24	22	20	18	17	15	13	11
67	95	90	85	80	76	71	67	62	58	54	50	46	42	38	34	30	27	25	23	21	20	18	16	15	13
68	95	90	85	81	76	72	67	63	59	55	51	47	43	39	35	31	28	26	24	23	21	19	17	16	14
69	95	90	86	81	77	72	68	64	59	55	51	47	44	40	36	32	29	27	25	24	22	20	19	17	15
70	95	90	86	81	77	72	68	64	60	56	52	48	44	40	37	33	30	28	26	25	23	21	20	18	17
71	95	90	86	82	77	73	69	64	60	56	53	49	45	41	38	34	31	29	27	26	24	22	21	19	18
72	95	91	86	82	78	73	69	65	61	57	53	49	46	42	39	35	32	30	28	27	25	23	22	20	19
73	95	91	86	82	78	73	69	65	61	58	54	50	46	43	40	36	33	31	29	28	26	24	23	21	20
74	95	91	86	82	78	74	70	66	62	58	54	51	47	44	40	37	34	32	30	29	27	25	24	22	21
75	96	91	87	82	78	74	70	66	63	59	55	51	48	44	41	38	34	33	31	30	28	26	25	23	22
76	96	91	87	83	78	74	70	67	63	59	55	52	48	45	42	38	35	34	32	30	29	27	26	24	23
77	96	91	87	83	79	75	71	67	63	60	56	52	49	46	42	39	36	34	33	31	30	28	27	25	24

Ventilating Formula

The weight of 1 cu. ft. of Air, at any temperature T, Fahr., and any barometric pressure B & relative humidity H, is calculated by the formula

$$W = \frac{1.3273\ (B - 0.3765\ P\ H)}{460 + T}$$

in which P is the vapor pressure in inches of mercury, for the observed temperature T, as given by Steam Tables.

The velocity V of Air, in feet per minute, due to any gage G in inches is then calculated by the formula

$$V = 1097\ \sqrt{\frac{G\,D}{W}} = 952.5\ \sqrt{\frac{(460 + T)\quad G\ D}{B - 0.3765\ P\ H}}$$

in which D is the density or specific gravity of the liquid used in the Manometer, referred to water as unity.

Example:- Find the velocity of an air current when the water gage is 1 inch (G = 1), the temperature of the Air being 70° F., the relative humidity 50% and the barometric pressure 30 inches.

Solution:- The vapor pressure, as taken from Steam Tables, for a temperature of 70° F., is 0.739 in. for water gage, D = 1, which gives

$$V = 952.5\ \sqrt{\frac{(460 + 70)\quad 1 \times 1}{30 - 0.3765 \times 0.739 \times 0.50}} = 4013 \text{ ft. per min.}$$

Courtesy Davis Instrument & Mfg. Co.

MINE RESISTANCE

Courtesy W. A. Rowe and Thos. W. Fitch, Jr.
American Blower Co.

The resistance to the flow of air through any given mine, or water guage, is a product of so many different factors that it would be difficult to give in a condensed form sufficient information to cover all the various considerations which would have to be borne in mind to arrive at anything like correct results.

Among the various factors might be mentioned the resistance due to regulators, turns, sudden changes of area in airways, etc. The most important factor of all, and that to which the following subject matter will apply, is the frictional resistance offered to the air due to its rubbing on sides, top, and bottom of airways and entries, and the following tables are given to enable one to approximate what might be expected in airways of various heights and widths.

In determining these quantities we have used the formula Friction in inches water guage $= \frac{K.\ S.\ V^2}{5.2\ A}$

Where S=rubbing surface in square ft.
V=velocity of air current in feet per minute.
A=area of airway in square feet.
K=.000,000,007,3.

This value of the coefficient K has been determined from various sources from experiments by engineers in this country and applies to the conditions for which these tables are made up, namely, for air passages which are untimbered, fairly smooth, straight, unobstructed, and regular in size.

For other conditions of airways a table of correction factors is given, the results from which will be found fairly accurate in actual practice.

Due allowance should be made in the case of turns, and for sudden expansions or contractions in the airways, where a considerable velocity is maintained, by adding an equivalent length of straight airway to the actual length as determined from the plans.

There is also another element to be taken into consideration in cases where the velocity of the air entering the mine is high, say above 1000′ per minute. In such cases the pressure (or vacuum) necessary to cause this initial velocity should be added to the frictional resistance of the mine. The quantities to be added are given in the following table.

For the sake of convenience the air friction in the mine airways has been based on an airway 1000′ long and proportionate amounts should be taken for airways of lesser or greater length. Where quantities less or greater than the amounts covered by the following tables are encountered it will be necessary to exterpolate, bearing in mind that the fractional resistance for a given size airway is proportioned to the square of the velocity or capacity.

A table is also given covering the resistance of circular shafts for various diameters and velocities, which is subject to the same correnctions for different conditions as is the case in the friction charts for airways. For shafts of square or rectangular shape, the tables for airways may be used.

AIR FRICTION IN MINE AIRWAYS.

TABLE OF VOLUMES OF AIR WHICH WILL FLOW THROUGH GIVEN SIZES OF AIRWAY AT GIVEN VELOCITIES AND THE RESISTANCE IN INCHES OF WATER-GAUGE WHICH WILL BE OFFERED BY 1,000 FT. LENGTH OF AIRWAY.

HEIGHT AIRWAY		4																			
WIDTH "		4′		5′		6′		7′		8′		9′		10′		11′		12′		13′	
AREA "		16′		20′		24′		28′		32′		36′		40′		44′		48′		52′	
PERIMETER "		16′		18′		20′		22′		24′		26′		28′		30′		32′		34′	
VELOCITY.		VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
PER SEC.	PER MINUTE.																				
5	300	4800	.18	6000	.11	7200	.71	8400	.10	9600	.09	10800	.09	12000	.09	13200	.09	14400	.08	15600	.08
6	360	5760	.17	7200	.16	8640	.16	10080	.14	11520	.14	12960	.13	14400	.13	15940	.12	17280	.12	18720	.12
7	420	6720	.25	8400	.22	10080	.21	11760	.19	13440	.19	15120	.18	16800	.17	18480	.17	20160	.17	21840	.16
8	480	7680	.32	9600	.29	11.520	.27	13440	.25	15360	.24	17280	.23	19200	.23	21120	.22	23040	.22	24960	.21
9	540	8640	.41	10800	.37	12960	.34	15120	.32	17280	.31	19440	.29	21600	.29	23760	.28	25920	.27	28080	.27
10	600	9600	.50	12000	.46	14400	.42	16800	.40	19200	.38	21600	.36	24000	.35	26400	.34	28800	.34	31200	.33
12	720	11520	.73	14400	.65	17280	.60	20160	.57	23040	.54	25920	.52	28800	.51	31680	.49	34560	.48	37440	.47
14	840	13440	.99	16800	.89	20160	.82	23520	.78	26880	.74	30240	.71	33600	.69	36960	.67	40320	.66	43680	.65
16	960	15360	1.29	19200	1.16	23040	1.08	26880	1.01	30720	.97	34560	.93	38400	.90	42240	.88	46080	.86	49920	.84
18	1080	17280	1.63	21600	1.47	25920	1.36	30240	1.28	34560	1.22	38880	1.18	43200	1.14	47520	1.11	51840	1.09	56160	1.07
20	1200	19200	2.02	24000	1.81	28800	1.68	33600	1.58	38400	1.51	43200	1.46	48000	1.41	52800	1.37	57600	1.34	62400	1.32
22	1320	21120	2.44	26400	2.20	31680	2.03	36960	1.92	42240	1.83	47520	1.76	52800	1.71	58080	1.66	63360	1.62	68640	1.60
24	1440	23040	2.90	28800	2.61	34560	2.42	40320	2.28	46080	2.18	51840	2.10	57600	2.03	63360	1.98	69120	1.94	74880	1.89
26	1560	24960	3.41	31200	3.07	37440	2.84	43680	2.68	49920	2.56	56160	2.46	62400	2.38	68640	2.32	74880	2.27	81120	2.23
28	1680	26880	3.95	33600	3.56	40320	3.29	47040	3.10	53760	2.96	60480	2.85	67200	2.77	73920	2.69	80640	2.63	87360	2.59
30	1800	28800	4.54	36000	4.08	43200	3.78	50400	3.56	57600	3.40	64800	3.28	72000	3.18	79200	3.09	86400	3.02	93600	2.96

AIR FRICTION IN MINE AIRWAYS.

TABLE OF VOLUMES OF AIR WHICH WILL FLOW THROUGH GIVEN SIZES OF AIRWAYS AT GIVEN VELOCITIES AND RESISTANCE IN INCHES OF WATER-GAUGE WHICH WILL BE OFFERED BY 1,000 FT. LENGTH OF AIRWAY.

HEIGHT AIRWAY		5'																			
WIDTH "		5'		6'		7'		8'		9'		10'		11'		12'		13'		14'	
AREA "		25'		30'		35'		40'		45'		50'		55'		60'		65'		70'	
PERIMETER "		20'		22'		24'		26'		28'		30'		32'		34'		36'		38'	
VELOCITY		VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
PER SEC.	PER MINUTE																				
5	300	7500	.10	9000	.09	10500	.09	12000	.08	13500	.08	15000	.08	16500	.07	18000	.07	19500	.07	21000	.07
6	360	9000	.15	10800	.13	12600	.12	14400	.12	16200	.11	18000	.11	19800	.11	21600	.10	23400	.10	25200	.09
7	420	10500	.20	12600	.18	14700	.17	16800	.16	18900	.15	21000	.15	23100	.14	25200	.14	27300	.14	29400	.13
8	480	12000	.26	14400	.24	16800	.22	19200	.21	21600	.20	24000	.19	26400	.19	28800	.18	31200	.18	33600	.17
9	540	13500	.33	16200	.30	18900	.28	21600	.27	24300	.25	27000	.24	29700	.24	32400	.23	35100	.23	37800	.21
10	600	15000	.40	18000	.37	21000	.35	24000	.33	27000	.31	30000	.30	33000	.29	36000	.29	39000	.28	42000	.26
12	720	18000	.58	21600	.53	25200	.50	28800	.47	32400	.45	36000	.44	39600	.42	43200	.41	46800	.40	50400	.38
14	840	21000	.79	25200	.72	29400	.68	33600	.64	37800	.61	42000	.59	46200	.57	50400	.56	54600	.55	58800	.52
16	960	24000	1.03	28800	.95	33600	.88	38400	.84	43200	.80	48000	.77	52800	.75	57600	.73	62400	.71	67200	.67
18	1080	27000	1.31	32400	1.20	37800	1.12	43200	1.06	48600	1.02	54000	.98	59400	.95	64800	.91	70200	.90	75600	.85
20	1200	30000	1.61	36000	1.48	42000	1.38	48000	1.31	54000	1.25	60000	1.21	66000	1.17	72000	1.14	78000	1.11	84000	1.05
22	1320	33000	1.95	39600	1.79	46200	1.67	52800	1.59	59400	1.52	66000	1.46	72600	1.42	79200	1.39	85800	1.35	92400	1.27
24	1440	36000	2.32	43200	2.13	50400	1.99	57600	1.88	64800	1.81	72000	1.74	79200	1.69	86400	1.65	93600	1.60	100800	1.52
26	1560	39000	2.71	46800	2.50	54600	2.34	62400	2.21	70200	2.12	78000	2.04	85800	1.98	93600	1.93	101400	1.88	109200	1.78
28	1680	42000	3.23	50400	2.90	58800	2.71	67200	2.57	75600	2.46	84000	2.37	92400	2.29	100800	2.24	109200	2.18	117600	2.06
30	1800	45000	3.69	54000	3.33	63000	3.11	72000	2.94	81000	2.82	90000	2.72	99000	2.64	108000	2.57	117000	2.51	126000	2.37
32	1920	48000	4.13	57600	3.78	67200	3.54	76800	3.36	86400	3.21	96000	3.10	105600	3.00	115200	2.93	124800	2.85	134400	2.70
34	2040	51000	4.66	61200	4.27	71400	4.00	81600	3.79	91800	3.63	102000	3.50	112200	3.38	122400	3.31	132600	3.22	142800	3.04

HEIGHT AIRWAY		6'																			
WIDTH "		6'		7'		8'		9'		10'		11'		12'		13'		14'		15'	
AREA "		36'		42'		48'		54'		60'		66'		72'		78'		84'		90'	
PERIMETER "		24'		26'		28'		30'		32'		34'		36'		38'		40'		42'	
VELOCITY		VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
PER SEC.	PER MINUTE																				
5	300	10800	.08	12600	.08	14400	.07	16200	.07	18000	.07	19800	.06	21600	.06	23400	.06	25200	.06	27000	.06
6	360	12960	.12	15120	.11	17280	.11	19440	.10	21600	.10	23760	.09	25920	.09	28080	.09	30240	.09	32400	.08
7	420	15120	.16	17640	.15	20160	.14	22680	.14	25200	.13	27720	.13	30240	.12	32760	.12	35280	.12	37800	.12
8	480	17280	.22	20160	.20	23040	.19	25920	.18	28800	.17	31680	.17	34560	.16	37440	.16	40320	.15	43200	.16
9	540	19440	.27	22680	.25	25920	.24	29160	.22	32400	.22	35640	.21	38880	.20	42120	.20	45360	.19	48600	.19
10	600	21600	.34	25200	.31	28800	.29	32400	.28	36000	.27	39600	.26	43200	.25	46800	.25	50400	.24	54000	.24
12	720	25900	.48	30240	.45	34560	.42	38800	.40	43200	.39	47520	.37	51840	.36	56160	.35	60480	.36	64800	.34
14	840	30240	.66	35280	.61	40320	.58	45360	.54	50400	.53	55440	.51	60480	.49	65520	.48	70560	.47	75600	.46
16	960	34560	.86	40320	.80	46080	.75	51840	.71	57600	.69	63360	.67	69120	.66	74880	.63	80640	.62	86400	.60
18	1080	38880	1.09	45360	1.01	51840	.95	58320	.89	64800	.87	71280	.84	77760	.82	84240	.80	90720	.78	97200	.76
20	1200	43200	1.34	50400	1.25	57600	1.18	64800	1.12	72000	1.08	79200	1.04	86400	1.01	93600	.98	100800	.96	108000	.94
22	1320	47520	1.64	55440	1.51	63360	1.42	71280	1.34	79200	1.30	87120	1.26	95040	1.22	102960	1.19	110880	1.16	118800	1.14
24	1440	51840	1.94	60480	1.80	69120	1.69	77760	1.59	86400	1.55	95040	1.50	103680	1.45	112320	1.41	120960	1.38	129600	1.35
26	1560	56160	2.27	65520	2.11	74880	1.99	84240	1.87	93600	1.82	102960	1.76	112320	1.70	121680	1.66	131040	1.62	140400	1.59
28	1680	60480	2.63	70560	2.45	80640	2.30	90720	2.16	100800	2.11	110880	2.04	120960	1.98	131040	1.92	141120	1.88	151200	1.84
30	1800	64800	3.02	75600	2.81	86400	2.64	97200	2.48	108000	2.42	118800	2.34	129600	2.27	140400	2.21	151200	2.16	162000	2.12
32	1920	69120	3.44	80640	3.19	92160	3.01	103680	2.83	115200	2.75	126720	2.66	138240	2.58	149760	2.61	161280	2.46	172800	2.41
34	2040	73440	3.88	85680	3.61	97920	3.40	110160	3.19	122400	3.11	134640	3.00	146880	2.91	159120	2.84	171360	2.77	183600	2.72

MINING CATALOGUES

HEIGHT AIRWAY		7'																			
WIDTH "		7'		8'		9'		10'		11'		12'		13'		14'		15'		16'	
AREA "		49'		56'		63'		70'		77'		84'		91'		98'		105'		112'	
PERIMETER "		28'		30'		32		34'		36'		38'		40'		42'		44		46'	
VELOCITY. PER SEC	PER MINUTE.	VOL.	W.G.	VOL.	W.G.	VOL	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	WG	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
5	300	14700	.07	16800	.07	18900	.06	21000	.06	23100	.06	25200	.06	27300	.06	29400	.05	31500	.05	33600	.05
6	360	17640	.10	20160	.10	22680	.09	25200	.09	27720	.08	30240	.08	32760	.08	35280	.08	37800	.08	40320	.07
7	420	20580	.14	23520	.13	26460	.13	29400	.12	32340	.12	35280	.11	38220	.11	41160	.11	44100	.10	47040	.10
8	480	23520	.18	26880	.17	30240	.16	33600	.16	36960	.15	40320	.15	43680	.14	47040	.14	50400	.14	53760	.13
9	540	26460	.23	30240	.22	34020	.21	37800	.20	41580	.19	45360	.18	49140	.18	52920	.17	56700	.17	60480	.17
10	600	29400	.29	33600	.27	37800	.26	42000	.24	46200	.24	50400	.23	54600	.22	58800	.22	63000	.21	67200	.21
12	720	35280	.41	40320	.39	45360	.37	50400	.35	55440	.34	60480	.33	65520	.32	70560	.31	75600	.30	80640	.30
14	840	41160	.56	47040	.53	52920	.50	58800	.48	64680	.46	70560	.45	76440	.43	82320	.42	88200	.41	94080	.41
16	960	47040	.74	53760	.69	60480	.66	67200	.63	73920	.60	80640	.58	87360	.57	94080	.55	100800	.54	107520	.53
18	1080	52920	.93	60480	.87	68040	.83	75600	.79	83160	.76	90720	.74	98280	.72	105840	.67	113400	.68	120960	.67
20	1200	58800	1.15	67200	1.08	75600	1.02	84000	.98	92400	.94	100800	.91	109200	.88	117600	.86	126000	.84	134400	.83
22	1320	64680	1.39	73920	1.31	83160	1.24	92400	1.18	101640	1.14	110880	1.10	120120	1.07	129360	1.05	138600	1.02	147840	1.00
24	1440	70560	1.66	80640	1.56	90720	1.47	100800	1.41	110880	1.36	120960	1.31	131040	1.27	141120	1.24	151200	1.22	161280	1.19
26	1560	76440	1.95	87360	1.83	98280	1.73	109200	1.65	120120	1.59	131040	1.54	141960	1.49	152880	1.46	163800	1.43	174720	1.40
28	1680	82320	2.26	94080	2.12	105840	2.01	117600	1.92	129360	1.85	141120	1.79	152880	1.73	164640	1.69	176400	1.66	188160	1.62
30	1800	88200	2.59	100800	2.43	113400	2.30	126000	2.20	138600	2.12	151200	2.05	163800	1.99	176400	1.94	189000	1.90	201600	1.86
32	1920	94080	2.95	107820	2.76	120960	2.62	134400	2.51	147840	2.41	161280	2.33	174720	2.26	188160	2.21	201600	2.16	215040	2.12
34	2040	99960	3.33	114240	3.12	128520	2.96	142800	2.83	157080	2.72	171360	2.64	185640	2.56	199920	2.50	214200	2.44	228480	2.39
36	2160	105840	3.73	120960	3.50	136080	3.32	151200	3.17	166320	3.07	181440	2.95	196560	2.87	211680	2.80	226800	2.74	241920	2.68
38	2280	111720	4.16	127680	3.90	143640	3.70	159600	3.53	175560	3.40	191520	3.29	207480	3.19	223440	3.11	239400	3.03	255360	2.99
40	2400	117600	4.61	134400	4.32	151200	4.10	168000	3.92	184800	3.77	201600	3.65	218400	3.54	236200	3.46	252000	3.38	268800	3.31

AIR FRICTION IN MINE AIRWAYS.

TABLE OF VOLUMES OF AIR WHICH WILL FLOW THROUGH GIVEN SIZES OF AIRWAYS AT GIVEN VELOCITIES AND RESISTANCE IN INCHES OF WATER-GAUGE WHICH WILL BE OFFERED BY 1,000 FT. LENGTH OF AIRWAY.

HEIGHT AIRWAY		8'																			
WIDTH "		8		9'		10'		11'		12'		13'		14'		15'		16'		17'	
AREA "		64'		72'		80'		88'		96'		104'		112'		120'		128'		136'	
PERIMETER "		32'		34'		36'		38'		40'		42'		44'		46'		48'		50'	
VELOCITY. PER SEC	PER MINUTE.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
5	300	19200	.06	21600	.06	24000	.06	26400	.06	28800	.05	31200	.05	33600	.05	36000	.05	38400	.05	40800	.05
6	360	23040	.09	25920	.09	28800	.08	31680	.08	34560	.08	37440	.07	40320	.07	43200	.07	46080	.07	48960	.07
7	420	26880	.12	30240	.12	33600	.11	36960	.11	40320	.10	43680	.10	47040	.10	50400	.09	53760	.09	57120	.09
8	480	30720	.16	34560	.15	38400	.15	42240	.14	46080	.13	49920	.13	53760	.13	57600	.12	61440	.12	65280	.12
9	540	34560	.20	38880	.19	43200	.18	47520	.18	51840	.17	56160	.16	60480	.16	64800	.16	69120	.15	73440	.15
10	600	38400	.25	43200	.24	48000	.23	52800	.22	57600	.21	62400	.20	67200	.20	72000	.19	76800	.19	81600	.19
12	720	46080	.36	57840	.34	57600	.33	63360	.31	69120	.29	74880	.29	80640	.29	86400	.28	92160	.27	97920	.27
14	840	53760	.49	60480	.47	67200	.44	73920	.43	80640	.41	87360	.40	94080	.39	100800	.38	107520	.37	114240	.36
16	960	61440	.65	69120	.61	76800	.58	84480	.56	92160	.54	99840	.52	107520	.51	115200	.49	122880	.48	130560	.47
18	1080	69120	.82	77760	.77	86400	.73	95040	.71	103680	.68	112320	.66	120960	.64	129600	.63	138240	.61	146880	.60
20	1200	76800	1.01	86400	.95	96000	.91	105600	.87	115200	.84	124800	.81	134400	.79	144000	.77	153600	.76	163200	.74
22	1320	84480	1.22	95040	1.15	105600	1.10	116160	1.05	126720	1.02	137280	.97	147840	.96	158400	.94	168960	.91	179520	.90
24	1440	92160	1.45	103680	1.37	115200	1.31	126720	1.25	138240	1.21	149760	1.17	161280	1.14	172800	1.11	184320	1.09	195840	1.07
26	1560	99840	1.70	112320	1.61	124800	1.53	137280	1.47	149760	1.42	162240	1.37	174720	1.33	187200	1.31	199680	1.28	212160	1.25
28	1680	107520	1.98	120960	1.87	134400	1.78	147840	1.71	161280	1.65	174720	1.59	188160	1.50	201600	1.67	215040	1.48	228480	1.45
30	1800	115200	2.27	129600	2.14	144000	2.04	158400	1.96	172800	1.89	187200	1.83	201600	1.78	216000	1.74	230400	1.70	244800	1.67
32	1920	122880	2.58	138240	2.44	153600	2.32	168960	2.23	184320	2.15	199680	2.08	215040	2.03	230400	1.98	245760	1.94	261120	1.89
34	2040	130560	2.91	146880	2.76	163200	2.62	179520	2.52	195840	2.43	212160	2.35	228480	2.29	244800	2.23	261120	2.18	277440	2.14
36	2160	138240	3.27	155520	3.08	172800	2.94	190080	2.82	207360	2.72	224640	2.64	241920	2.57	259200	2.50	276480	2.45	293760	2.40
38	2280	145920	3.64	164160	3.44	182400	3.27	200640	3.14	218880	3.03	237120	2.94	255360	2.86	273600	2.79	291840	2.73	310080	2.67
40	2400	153600	4.03	172800	3.81	192000	3.63	211200	3.48	230400	3.36	249600	3.25	268800	3.17	288000	3.09	307200	3.02	326400	2.96

AIR FRICTION IN MINE AIRWAYS.

TABLE OF VOLUMES OF AIR WHICH WILL FLOW THROUGH GIVEN SIZES OF AIRWAYS AT GIVEN VELOCITIES AND RESISTANCE IN INCHES OF WATER-GAUGE WHICH WILL BE OFFERED BY 1,000 FT. LENGTH OF AIRWAY.

HEIGHT AIRWAY		9																	
WIDTH		9'		10'		11'		12'		13'		14'		15'		16'		17'		18'	
AREA		81'		90'		99'		108'		117'		126'		135'		144'		153'		162'	
PERIMETER		36'		38'		40'		42'		44'		46'		48'		50'		52'		54'	
VELOCITY PER SEC.	VELOCITY PER MINUTE.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
5	300	24300	.06	27000	.05	29700	.05	32400	.05	35100	.05	37800	.05	40500	.04	43200	.04	45900	.04	48600	.04
6	360	29160	.08	32400	.08	35640	.07	38880	.07	42120	.07	45360	.07	48600	.06	51840	.06	55080	.06	58320	.06
7	420	34020	.11	37800	.10	41580	.10	45360	.10	49140	.09	52920	.09	56700	.09	60480	.09	64260	.08	68040	.08
8	480	38880	.14	43200	.14	47520	.13	51840	.13	56160	.12	60480	.12	64800	.11	69120	.11	73440	.11	77760	.11
9	540	43740	.18	48600	.17	53460	.16	58320	.16	63180	.15	68040	.15	72900	.15	77760	.14	82620	.14	87480	.14
10	600	48600	.22	54000	.21	59400	.20	64800	.20	70200	.19	75600	.18	81000	.18	86400	.17	91800	.17	97200	.17
12	720	58320	.32	64800	.31	71280	.29	77760	.28	84240	.27	90720	.27	97200	.26	103680	.25	110160	.25	116640	.24
14	840	68040	.44	75600	.42	83160	.40	90720	.38	98280	.37	105840	.36	113400	.35	120960	.34	128520	.34	136080	.33
16	960	77760	.57	86400	.54	95040	.52	103680	.50	112320	.49	120960	.47	129600	.46	138240	.45	146880	.44	155520	.43
18	1080	87480	.73	97200	.69	106920	.66	116640	.63	126360	.61	136080	.60	145800	.58	155520	.57	165240	.55	174960	.54
20	1200	97200	.90	108000	.84	118800	.81	129600	.78	140400	.76	151200	.74	162000	.72	172800	.70	183600	.68	194400	.67
22	1320	106920	1.08	118800	1.03	130680	.99	142560	.95	154440	.92	166320	.89	178200	.87	190080	.86	201960	.83	213840	.81
24	1440	116640	1.29	129600	1.23	142560	1.17	155520	1.13	168480	1.09	181440	1.06	194400	1.03	207360	1.01	220320	.99	233280	.97
26	1560	126360	1.51	140400	1.44	154440	1.38	168480	1.32	182520	1.28	196560	1.24	210600	1.21	224640	1.18	238680	1.16	252720	1.14
28	1680	136080	1.76	151200	1.67	166320	1.60	181440	1.54	196560	1.49	211680	1.44	226800	1.40	241920	1.37	257040	1.34	272160	1.32
30	1800	146800	2.02	162000	1.91	178200	1.83	194400	1.76	210600	1.71	226800	1.66	243000	1.61	259200	1.57	275400	1.54	291600	1.51
32	1920	165520	2.29	172800	2.18	190080	2.09	207360	2.01	224640	1.94	241920	1.88	259200	1.83	276480	1.79	293760	1.75	311040	1.72
34	2040	166240	2.59	183600	2.46	201960	2.36	220320	2.27	238680	2.19	257040	2.13	275400	2.07	293760	2.02	312120	1.98	330480	1.94
36	2160	175960	2.90	194400	2.76	213840	2.64	233280	2.54	252720	2.46	272160	2.38	291600	2.32	311040	2.27	330480	2.22	349920	2.18
38	2280	184680	3.23	205200	3.07	225720	2.94	246240	2.83	266760	2.74	287280	2.66	307800	2.59	328320	2.53	348840	2.47	369360	2.42
40	2400	194400	3.58	216000	3.40	237600	3.25	259200	3.14	280800	3.03	302400	2.94	324000	2.86	345600	2.80	367200	2.74	388800	2.69
45	2700	218700	4.64	243000	4.31	267300	4.12	291600	3.97	315900	3.84	340200	3.73	364600	3.63	388800	3.54	413100	3.46	437400	3.40
50	3000	243000	5.60	270000	5.32	297000	5.09	324000	4.90	351000	4.74	378000	4.60	405000	4.48	432000	4.37	459000	4.28	486000	4.20

CORRECTIONS

Corrections for varing conditions of Airways.

Use ½ of Table Water Guage for Air passages which are concreted, wood lined or of exceptional smoothness, and untimbered, straight, regular, and free from obstruction.

Use full Table Water Guage for Air passages which are untimbered, fairly smooth, straight, unobstructed, and regular in size.

Use 1½ times Table Water Guage for Air passages which are untimbered and moderately crooked, irregular, obstructed, and rough.

Use 2 times Table Water Guage for Air passages which are timbered but otherwise fairly smooth, straight, regular, and free from obstruction.

Use 2½ times Table Water Guage for Air passages which are timbered and moderately crooked, irregular, obstructed, and rough.

Use 3 times Table Water Guage for Air passages which are timbered and very crooked, irregular, obstructed, and rough.

In cases of airways in extremely bad condition, the resistance may be greater than three times the Water Guages given in the table.

ORIFICE WATER GAUGES

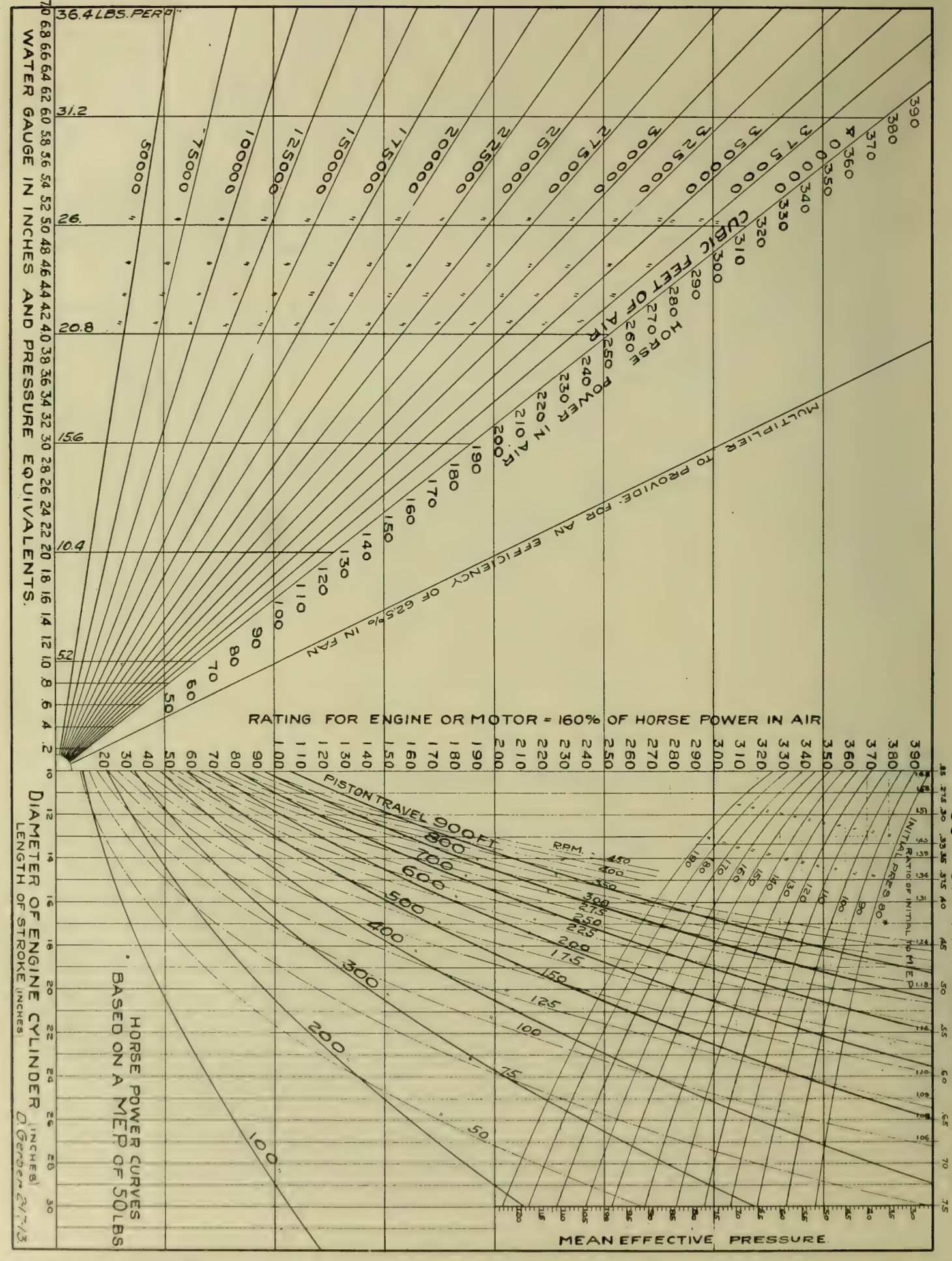
Initial Velocity Pressure (or Vacuum) in inches Water Gauge required to cause given volumes to flow into airways of given area.

Volume Cu. Ft. Per Min.	Area of Entry in Sq. Ft.																						
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	110	120	130	140	150
10,000	.37	.10																							
15,000	.84	.21	.10																						
20,000		.37	.16	.10																					
25,000		.58	.26	.15	.10																				
30,000		.84	.37	.21	.13	.10																			
35,000			.51	.28	.18	.13	.10																		
40,000			.66	.37	.24	.16	.12	.10																	
45,000			.84	.47	.30	.21	.16	.12	.10																
50,000				.58	.37	.26	.19	.15	.11	.10															
60,000				.84	.53	.37	.28	.21	.16	.13	.11	.10													
70,000					.71	.51	.37	.28	.23	.20	.15	.12	.11	.10											
80,000						.66	.49	.37	.29	.24	.20	.16	.14	.12	.11	.10									
90,000						.84	.62	.47	.37	.30	.25	.21	.18	.16	.13	.12	.11	.10							
100,000							.76	.59	.46	.37	.31	.26	.22	.19	.16	.14	.13	.12	.11	.10					
110,000							.92	.71	.56	.45	.37	.32	.27	.23	.20	.18	.16	.14	.13	.11	.10				
120,000								.84	.66	.54	.45	.37	.32	.28	.24	.21	.19	.16	.15	.13	.11	.10			
130,000								.99	.78	.63	.52	.44	.37	.32	.28	.25	.22	.20	.18	.16	.13	.11	.10		
140,000									.90	.73	.61	.51	.44	.37	.33	.28	.25	.22	.20	.19	.15	.13	.11	.10	
150,000										.83	.69	.59	.50	.43	.37	.33	.29	.26	.23	.21	.18	.10	.13	.11	.10
175,000											.95	.79	.67	.59	.51	.45	.40	.35	.32	.28	.24	.20	.17	.15	.12
200,000													.88	.76	.66	.59	.52	.46	.43	.37	.31	.26	.22	.19	.17
225,000															.84	.74	.65	.59	.53	.47	.39	.33	.28	.23	.21
250,000																.92	.82	.72	.65	.59	.49	.40	.33	.30	.26
275,000																		.87	.78	.70	.58	.49	.42	.36	.31
300,000																				.84	.69	.59	.50	.43	.37

AIR FRICTION IN CIRCULAR SHAFTS.

TABLE OF VOLUMES OF AIR WHICH WILL FLOW THROUGH GIVEN SIZES OF CIR AIR SHAFTS AT GIVEN VELOCITIES, AND RESISTANCE IN INCHES OF WATER-GAUGE WHICH WILL BE OFFERED BY 1,000 FT DEPTH OF SHAFT

DIA OF SHAFT		6'		7'		8'		9'		10'		12'		14'		16'		18'		20'	
AREA		28'		38'		50'		64'		79'		113'		154'		201'		254'		314'	
PERIMETER		19'		22'		25'		28'		31'		38'		44'		50'		57'		63'	
VELOCITY PER SEC	VELOCITY PER MINUTE	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.	VOL.	W.G.
10	600	16800	.34	22800	.29	30000	.25	38400	.22	47400	.20	67800	.17	92400	.14	120600	.13	162400	.11	188400	.10
12	720	20160	.49	27360	.42	36000	.36	46080	.32	56880	.28	81360	.24	110880	.21	144720	.18	182880	.16	226080	.15
14	840	23520	.67	31920	.57	42000	.49	53760	.43	66360	.39	94920	.33	129360	.28	168840	.25	213360	.22	263760	.20
16	960	26880	.88	36480	.75	48000	.65	61440	.56	75840	.51	108480	.43	147840	.37	192960	.32	243840	.29	301440	.26
18	1080	30240	1.11	41040	.95	54000	.82	69120	.71	86320	.64	122040	.56	166320	.46	217080	.41	274320	.37	339120	.33
20	1200	33600	1.37	45600	1.17	60000	1.01	76800	.88	94800	.72	135600	.68	184800	.58	241200	.60	304800	.45	376800	.40
22	1320	36960	1.66	50160	1.41	66000	1.22	84480	1.07	104280	.96	149160	.82	203280	.70	266320	.61	335280	.55	414480	.49
24	1440	40320	1.98	54720	1.68	72000	1.45	92160	1.27	113760	1.14	162720	.98	221760	.83	289440	.72	365760	.65	462160	.58
26	1560	43680	2.31	59280	1.97	78000	1.70	99840	1.49	123240	1.34	176280	1.15	240240	.97	313560	.86	396240	.76	489840	.68
28	1680	47040	2.68	63840	2.28	84000	1.98	107520	1.73	132720	1.55	189840	1.33	258720	1.13	337680	.98	426720	.88	527520	.79
30	1800	50400	3.08	68400	2.63	90000	2.27	115200	1.98	142200	1.78	203400	1.58	277200	1.30	361800	1.13	457200	1.02	565200	.91
32	1920	53760	3.50	72960	2.99	96000	2.58	122880	2.26	151680	2.02	216960	1.74	295680	1.47	385920	1.28	487680	1.16	602880	1.04
34	2040	57120	3.95	77520	3.37	102000	2.91	130560	2.55	161160	2.29	230520	1.96	314160	1.66	410040	1.45	518160	1.31	640560	1.17
36	2160	60480	4.43	82080	3.78	108000	3.27	138240	2.86	170640	2.56	244080	2.20	332640	1.87	434160	1.62	548640	1.47	678240	1.31
38	2280	63840	4.94	86640	4.21	114000	3.64	145920	3.18	180120	2.86	257640	2.45	351120	2.08	458280	1.81	579120	1.63	715920	1.46
40	2400	67200	5.47	91200	4.67	120000	4.03	153600	3.53	189600	3.16	271200	2.71	369600	2.30	482400	2.00	609600	1.81	753600	1.62
45	2700	76600	6.93	102600	5.91	135000	5.10	172800	4.47	213300	4.00	305100	3.43	415800	2.92	542700	2.54	685800	2.29	847800	2.05
50	3000	84000	8.56	114000	7.30	150000	6.30	192000	5.50	237000	4.94	335000	4.24	462000	3.60	603000	3.13	762000	2.83	942000	2.53


WATER GAUGE IN INCHES AND PRESSURE EQUIVALENTS.
36.4 LBS. PER □"
31.2
26.
20.8
15.6
10.4
5.2
CUBIC FEET OF AIR
HORSE POWER
MULTIPLIER TO PROVIDE FOR AN EFFICIENCY OF 62.5% IN FAN
RATING FOR ENGINE OR MOTOR = 160% OF HORSE POWER IN AIR
PISTON TRAVEL 900 FT.
800
700
600
500
400
300
200
100
RPM.
HORSE POWER CURVES
BASED ON A MEP OF 50 LBS.
DIAMETER OF ENGINE CYLINDER (INCHES)
LENGTH OF STROKE (INCHES)
MEAN EFFECTIVE PRESSURE
CUT OFF IN PERCENT OF STROKE
INITIAL RATIO OF INITIAL TO MEP
INITIAL PRES. 80*
D. Gerber 2/7/13

Air Power Chart

The chart shown on opposite page is arranged to indicate directly the actual horse power in a mine ventilating air of a predetermined volume and water gauge. Also to successively show the commercial rating of a motor or steam engine required for a source of power.

In the event of using a steam engine for power, the diameter of the engine cylinder required for a given piston speed may be read directly from the chart.

The calculations for cylinder diameters are based on a mean effective pressure of 50 pounds per sq. inch. For other mean pressures it will be necessary to interpolate.

As noted on chart, the assumption is made that the mechanical efficiency of the fan is approximately 62½%. This percentage may be taken at any figure however.

In general the chart is constructed with a water gauge scale along the lower edge, advancing from near the center of bottom border toward the left.

Above this scale is a group of converging lines, used to represent volumes of air in cubic feet, and a single inclined line passing through the common converging point. This line serves as a multiplier to obtain a proper figure for power under the assumed efficiency of 62½%.

The vertical line passing through the point of convergence is graduated to show rating of prime mover. The series of (heavy curved lines) curves to the right of horse power scale, represent piston speed in feet per minute. Extending to the right from the common converging point, along lower border is a scale reading diameter of engine cylinder and may be read in connection with horse power value and piston speeds.

The graduations used to represent cylinder diameters may also be used to designate length of stroke and when read in connection with the light (dot and dash) curved line, marked revolutions per minute, a continuation reading of stroke revolution from which piston speed may be read.

Care should be taken in taking such a reading to avoid confusing length of strokes and piston diameter.

In the upper left hand corner of chart there is a group of curved lines from which may be obtained a value for the mean effective pressure corresponding to any point of cut off for a range of initial pressures.

By the initial pressure is meant the steam pressure at engine or near it.

These values do not have any direct conection to the work done by the chart but serves as a ready means of arriving at a value for a mean effective pressure with which the charted results may be checked. The method of using chart may be readily understood by following the example line out on chart.

EXAMPLE—It is desired to know the horse power in a volume of 275,000 cubic feet moved against a pressure of 3½ inches of water gauge, the horse power of a suitable motor or engine to drive a fan having an efficiency of 62½% of the above capacity, also the diameter of cylinder of an engine, the piston speed of which is 500 ft. per minute. Mean effective pressure to be 50 pounds per sq. inch. Find the 3½ graduation in water gauge scale and read up to line marked 275,000 cubic ft. of air, thence to the right to scale reading actual horse power in air and read 152, thence up to the line marked multiplier, thence to the right to horse power rating scale and read 242 horse power.

Note—(This rating is based on a mean effective pressure of 50 pounds per sq. inch, should the pressure be more or less in connection with any problem it will be necessary to interpolate, for instance say the pressure is 40 pounds (M. E. P.) it would be necessary to add 20% to the horse power, reading, or use 290 instead of 242. If the M. E. P. is greater than 50 pounds the rating would be reduced).

Thence to the right to the heavy curved line designated as 500 ft. per min. piston speed, thence down to the cylinder diameter scale and read 20¼ inches diameter of cylinder.

By reading up from the scale indicating the length of stroke in inches to the 500 feet piston speed the number of revolutions per minute of engine may be determined.

From the group of lines indicating mean effective pressures the percent of cut off required for a particular initial pressure may be arrived at. Suppose a mine superintendent has an engine of known diameter and stroke, he also knows approximately the steam pressure available and wishes to know the range of volume and pressure under which such motive power would be effective.

By assuming a rate for revolutions per minute, the stroke combined will give piston speed. The diameter combined with the piston speed will give the horse power for a mean effective pressure of 50 lbs. per sq. inch by interpolation this may be changed for any M. E. P.

The horse power once determined, it is only necessary to reverse the operation previously described and read the water gauge at which the determined horse power will deliver the various quantities of air.

Note—The scope of this chart does not take into account any features of the fan other than to assume that it operates with a mechanical efficiency of 62½%.

AMERICAN BLOWER COMPANY

Detroit, Michigan, U. S. A.

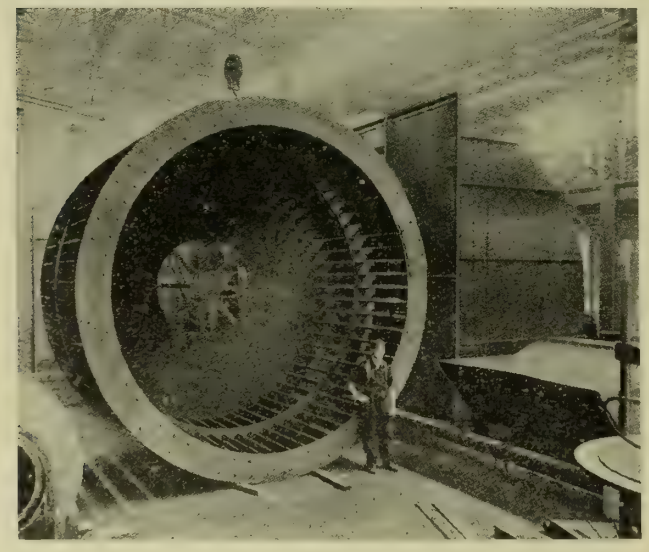
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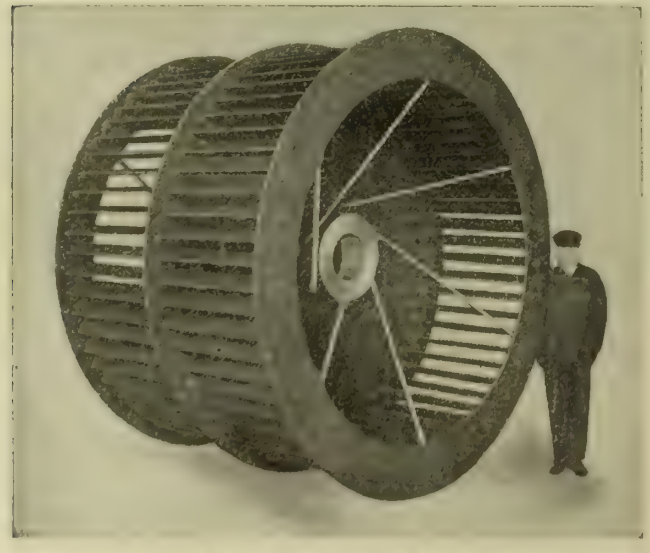
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Products

Mine Ventilating Fans, Mechanical Draft and Blast Equipment; Heating, Ventilating and Drying Apparatus; Vertical Enclosed Self-Oiling Steam Engines, and Steam Traps.



Single Inlet "Sirocco" Fan Wheel in Course of Construction.



Double Inlet "Sirocco" Mine Fan Wheel.

The "SIROCCO" is the ORIGINAL fan of the many blade or turbine type, and, since its advent in Great Britain about fifteen years ago, has almost entirely superseded all the old types. In 1910 the American Blower Company acquired the rights to manufacture it in this hemisphere, and by them has been developed to such a stage that it has met with unprecedented success.

The DISTINGUISHING CHARACTERISTICS relate principally to the wheel, although it must be borne in mind that ALL the other elements that enter into the design of the completed structure are of equal importance in getting an efficient machine.

The "SIROCCO" WHEEL has 64 narrow blades curved forward in the direction of rotation. This permits the use of a large inlet as compared with other types of fans, the inlet being of a diameter practically equal to that of the wheel itself. By this means losses due to high inlet velocities are eliminated.

The blades are mounted on a heavy steel disc, which, in turn, is fastened to a heavy cast iron hub, accurately bored and key-seated to receive the shaft. The outer annular ring is reinforced with heavy tie rods of drop forged carbon steel, so arranged as to form a bracing unexcelled for strength, but which does not obstruct the free inflow of air.

The SHAFTS are of forged steel, ground to size.

The BEARINGS in the smaller sizes are adjustable, in the larger sizes rigid, with provision for lateral and vertical adjustment. All are double ring oiling and lined with our special babbitt metal.

The HOUSINGS are built of the best quality leveled steel plate, heavily stiffened, and are provided with adjustable inlet cones. This permits the wheel being removed without dismantling the housing, and further reduces inlet losses.

"SIROCCO" fans have the highest volumetric, manometric, and mechanical efficiencies of any fan on the market.

The great capacity of "SIROCCO" fans enables the use of smaller diameter wheels, whereby smaller foundations are required, with MARKED SAVING IN INSTALLATION COST.

LOW TIP SPEEDS mean long life.

HIGH MECHANICAL EFFICIENCY means low power requirements and economy of operation. The saving in cost of operation will pay for the fan in a short time. If you are using other types of fans, "power eaters," it will pay you to scrap them and install "SIROCCO." If you are in the market for new equipment you will be money ahead if you install a "SIROCCO," even if you could get another without cost.

THE MOST DISCRIMINATING USERS, not only in mine work, but in all the other fields requiring fans or blowers, have selected the "SIROCCO" fan as a standard. Included in this class might be mentioned the United States Government, all the large corporations, and leading engineers and architects throughout the country. A list of users will be gladly furnished on application.

"SIROCCO" fans can be furnished in all the usual arrangements, for exhausting or blowing, reversible or not, and arranged for belt, rope, chain, or geared drive, or for direct connection to engine or motor.

Inquiries should be as explicit as possible, with detailed information as to the conditions. Let our skilled corps of engineers give you the benefit of our experience, to your ultimate profit.

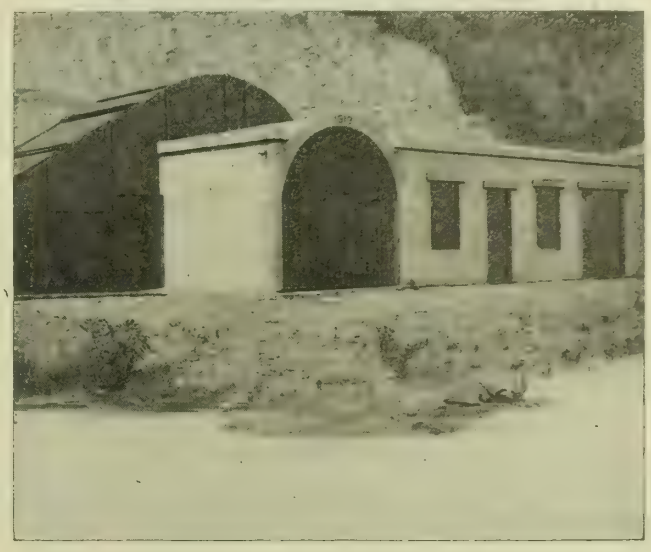
Some Important Users of "Sirocco" Fans:

ANACONDA COPPER MINING CO., Butte, Mont., 63 fans at various mines.

POND CREEK COAL CO. and U. S. COAL & OIL CO., 9 fans, Stone, Ky., and Holden, W. Va.



Crescent Mine, of Monongahela River Cons. Coal & Coke Co.



One of 2 "Sirocco" Fans at United States Coal & Oil Co., at Holden, W. Va.



View of No. 12 Double Inlet "Sirocco" Fan, at Work in the McLean County Coal Mines at Bloomington, Ill.

MONON. RIVER CONS. COAL & COKE CO., 4 fans at various mines in Pennsylvania.

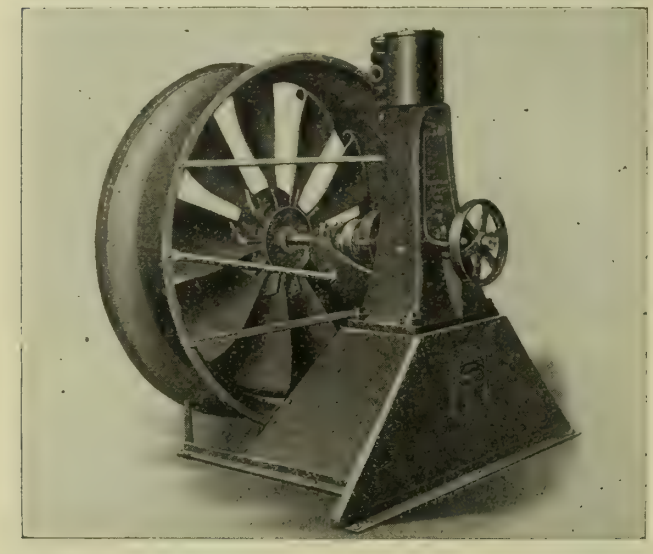
BERWIND-WHITE COAL MINING CO., 4 fans at Windber and Herminie, Pa.

CAMBRIA STEEL CO., Johnstown, Pa.

And many others.

Ventura Disc Mine Fans

THE VENTURA DISC MINE FAN is the latest achievement in the development of this class of apparatus. It is especially adapted to the ventillation of drift mines and for development work on new operations where the requirements do not exceed the quantities given in the following capacity table.



The fan is of EXTRA HEAVY CONSTRUCTION, having ten die-formed curved blades, in the larger sizes reinforced. A large cone-shaped central disc prevents any back draft. The shafts are extra heavy, ground to size.

The BEARINGS are double ring oiling adjustable, lined with our Special Babbitt, and are mounted on heavy cast iron pedestal. THIS BRINGS THE BEARINGS OUTSIDE THE DRIFT, WHERE THEY ARE EASILY ACCESSIBLE. Furthermore, this permits the wheel being overhung, WHEREBY IT MAY BE EASILY REVERSED in a few minutes.

The MECHANICAL EFFICIENCY is very high, it requiring but two-thirds the horse-power of any other fan for the same air duty.

In addition to the regular line of pulley fans, it can be furnished with direct connected engines or motors to suit the usual electric currents encountered.

General Data

Diameter of Wheel	List Price	Pulley		Diameter Over All	Diameter of Shaft	Width of Case	Shipping Weight in Pounds	Telegraphic Code Word
		Diameter	Face					
48	$185	13	5¼	58	1 3/16	15¾	750	Mealy
54	205	14	6¼	65	1 3/16	17½	850	Meander
60	295	16	6¼	72	2 11/16	19½	1200	Meandry
66	330	16	7¼	79	2 11/16	21½	1400	Mease
72	370	18	8	85	2 11/16	24	1600	Meated
84	550	20	9	101	2 11/16	27	2100	Meatus
96	750	24	10	107	3 3/16	31½	2600	Meawl



CAPACITY TABLE FOR MINE VENTILATION FOR ALTITUDES UP TO 1000 FEET

Diameter of Wheel Inches	¼" Pressure			⅜" Pressure			½" Pressure			⅝" Pressure		
	Cu. Ft. Min.	R.P.M	B.H.P.	Cu. Ft. Min.	R.P.M	B.H.P.	Cu. Ft. Min.	R.P.M	B H.P.	Cu. Ft. Min.	R.P.M	B.H.P.
48	12,550	424	0.97	15,320	518	1.77	17,770	598	2.73	19,870	670	3.82
54	15,800	376	1.22	19,300	460	2.22	22,380	532	3.43	25,000	594	4.8
60	19,400	338	1.49	23,750	414	2.73	27,500	478	4.22	30,700	535	5.9
66	23,400	308	1.80	28,550	377	3.28	33,100	436	5.06	37,000	488	7.12
72	27,800	282	2.14	34,000	345	3.92	39,400	398	6.05	44,000	446	8.48
84	37,750	241	2.9	46,100	296	5.3	53,500	342	8.2	59,750	382	11.5
96	49,000	211	3.76	60,000	259	6.91	69,500	299	10.7	77,650	335	14.9
	¾" Pressure			1" Pressure			1¼" Pressure					
48	21,700	731	5.0	25,100	846	7.71	28,000	946	10.75			
54	27,340	650	6.3	31,600	751	9.7	35,300	840	13.55			
60	33,600	584	7.74	38,800	676	11.9	43,450	755	16.7			
66	40,400	533	9.3	46,700	615	14.35	52,200	688	20.1			
72	48,150	488	11.1	55,600	564	17.1	62,250	630	23.9			
84	65,350	418	15.0	75,500	483	23.2	84,300	541	32.4			
96	85,000	366	19.6	98,000	423	30.1	109,820	473	42.1			

The pressures at the top of the columns are static pressures in inches of water.
Under the conditions assumed in making up this table, the capacities given, are guaranteed to be correct. At any of the above speeds, the volume of air delivered will be less, if the resistance is more than has been assumed, in which case the resulting pressure will be higher and the horse power required greater.

GENERAL ELECTRIC COMPANY

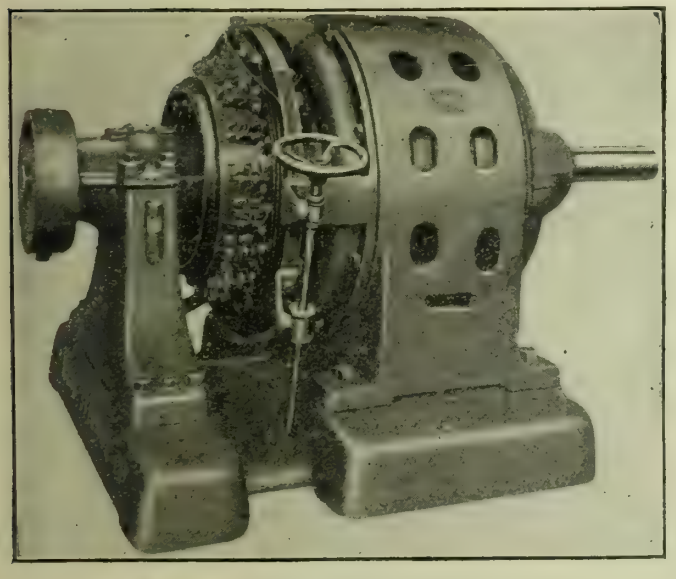
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The Guarantee on Goods of Excellence Electrical

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In All Large Cities

Electrical Equipment for Mines

The fan, a vital factor in the operation of many mines, has also received its full share of attention in the progressive application of electric power in the mining industry.



100 H. P., 2200 Volt Brush Shifting Motor for Driving Mine Fans.

The well known advantages of alternating current from the standpoint of generation and distribution have been somewhat handicaped in application in the numerous instances where, for one reason or another, adjustable speed drives were required. For constant speed drives the squirrel cage induction motor offers practically ideal characteristics.

The induction motor with phase wound secondary and rheostatic control has been widely supplied and with entire success save for the handicap inherent with this form of control, i. e., a reduction in efficiency directly proportional to the reduction in speed.

The importance of gaining even a few per cent in efficiency on a 24-hour every-day-in-the-year load will warrant considerable careful attention to the fan drive motors supplied by the General Electric Company.

The adaptation to American conditions of the polyphase brush shifting commutator motor marks an important advance in the application of motor drive to fan service. This type of motor is peculiar in that no external control equipment is required, the entire range of speed from standstill to maximum being obtained by shifting the brushes forward from the neutral position. The practical operating range of speeds varies with the application, but for fan service may be assumed to extend from its normal rated value down to approximately one third speed.

At rated load and speed, the power factor is practically unity and throughout the operating range the apparent efficiency is usually considerably better than for the induction motor with rheostatic control. With brushes at neutral and motor at standstill, a magnetizing current of approximately 10% of normal full load current is drawn from the line.

A second method applicable to standard induction motors with phase wound secondaries involves a polyphase commutator motor which transforms the slip energy of the main motor, taken at voltage and frequency depending upon the fan speed, and drives a standard squirrel cage motor electrically connected to the main supply system, slightly above synchronism, thus causing it to operate as an induction generator. It thus returns to the system energy proportional to the drop in speed of the main motor less, of course, the losses in the regulating set. This method also affords means of correcting the power factor to any desired value and shows a very high efficiency over the entire operating range. This range varies roughly from 35% regulation on 60 cycle systems to 55% on 25 cycle systems.

THE JEFFREY MANUFACTURING COMPANY

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Middlesboro, Ky., Middlesboro Hotel

Jeffrey Stepped Multi-Bladed Fans

are built to handle the air at low velocities.



Single Inlet Multi-Bladed Fan Wheel

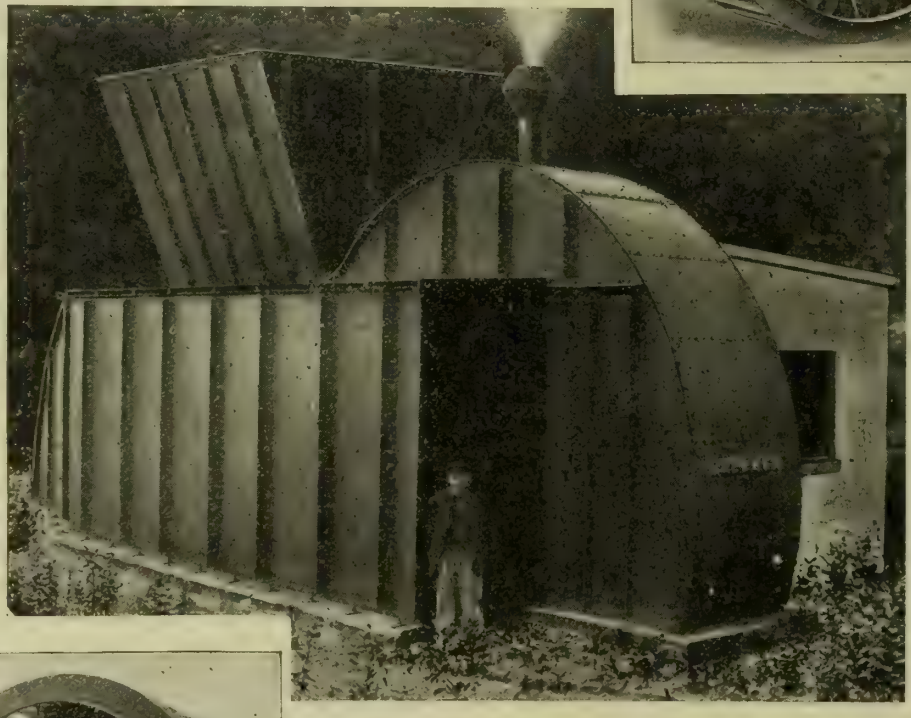
The Jeffrey Multi-Bladed Wheel

with its stepped series of blades receives the air at a low velocity and accelerates it without shock, which means the maximum of economy in operation. They save 10% to 30% in power bills.

We build the most complete line of fans for the ventilation of mines made by any manufacturer in the world.

Your interests can be best served by a concern whose fans are designed for one purpose only—the ventilation of mines.

Carefully consider that the Jeffrey Stepped Multi-Bladed Fan requires less power for its operation than any other fan heretofore offered.



Complete Steel Casing

extending to the ground line saves masonry work and reduces cost of installation to a minimum.

We adapt our fan casings to meet any conditions and provide explosion doors for same.



Double Inlet Multi-Bladed Fan Wheel

Jeffrey Centrifugal Fans

are built in sizes from 2 ft. to 20 ft. with capacities from 10,000 to 600,000 cubic feet per minute.

We also build Centrifugal Booster Fans and a complete line of Disc Fans.

Write for "Mine Ventilation Catalogue," the most complete ever published.

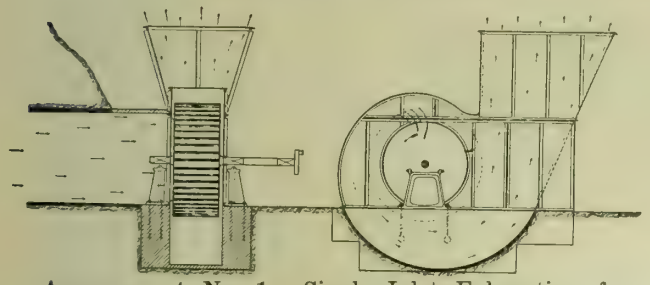
The layouts illustrated on the opposite page will give a comprehensive idea of the design best adapted to any particular installation. These drawings cover the majority of standard designs, yet there are some locations where a different arrangement is required and estimates covering same will be furnished upon request.

The fans are built for direct connection to an engine and in the small sizes they can be direct coupled to a heavy slow speed motor. They are also arranged for belt drive from a motor or an engine, and where space is limited a silent chain drive may be used on the smaller fans.

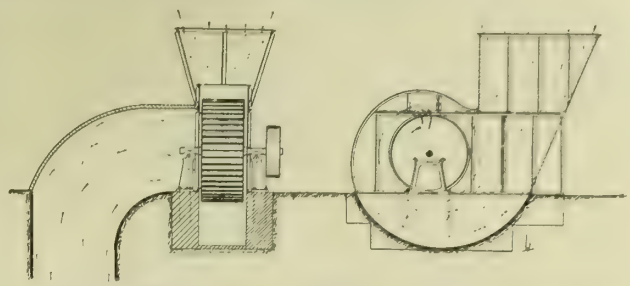
While these drawings show the mine connections made in masonry, the connections may be made in steel construction, if desired.

THE JEFFREY MANUFACTURING COMPANY

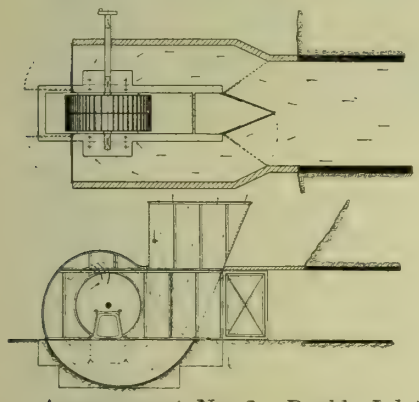
General Arrangements of Jeffrey Mine Ventilation Fans



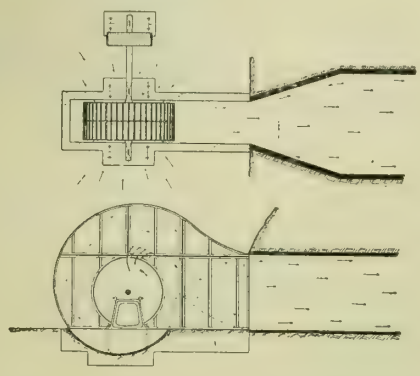
Arrangement No. 1. Single Inlet Exhausting from drift mine.



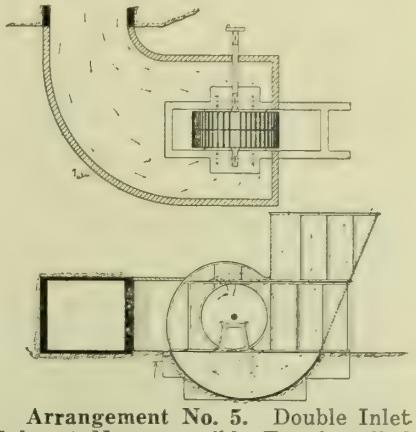
Arrangement No. 2. Single Inlet Exhausting from shaft.



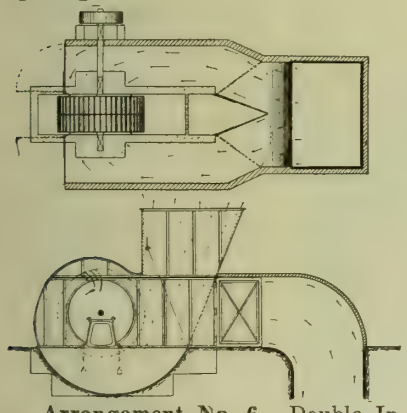
Arrangement No. 3. Double Inlet Primarily Exhaust Reversible Fan for a drift mine. The installation may be made at right angles to the mine opening.



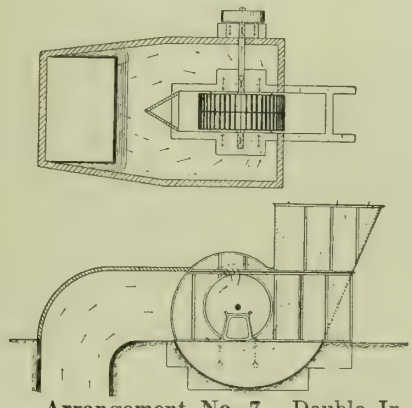
Arrangement No. 4. Double Inlet Blowing Fan for installation at drift mine. It may be installed at right angles if provided with a good curve.



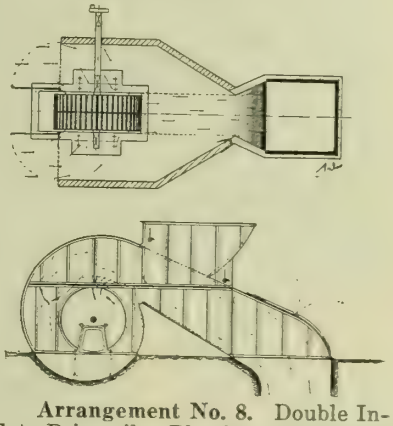
Arrangement No. 5. Double Inlet Exhaust Non-reversible Fan installed at a drift mine. The installation is shown at right angles.



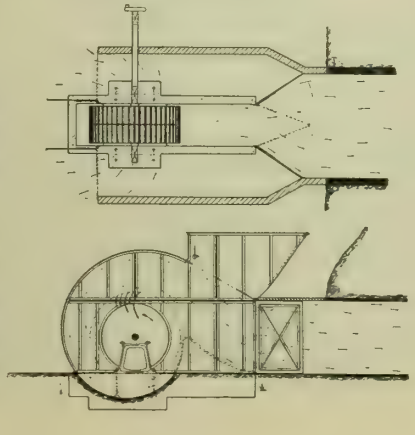
Arrangement No. 6. Double Inlet Primarily Exhaust Reversible Fan for a shaft mine. Explosion doors may be used directly over the air shaft.



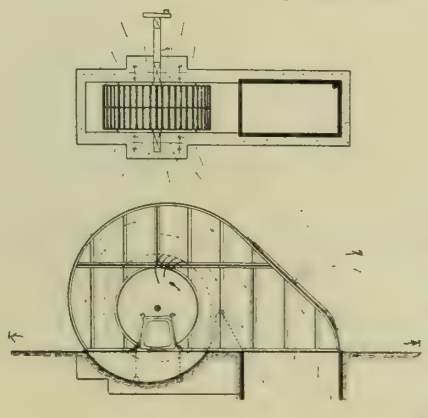
Arrangement No. 7. Double Inlet Exhaust Non-reversible Fan installed at a shaft mine. Explosion doors may be placed at top of air shaft.



Arrangement No. 8. Double Inlet Primarily Blowing Reversible Fan installed at an air shaft. It is provided with steel extension and hood over the shaft, fitted with explosion doors.



Arrangement No. 9. Double Inlet Primarily Blowing Reversible Fan installed at a drift mine. The installation may be made at right angles to mine opening if provided with a good curve.



Arrangement No. 10. Double Inlet Blowing Fan for installation at a shaft mine. Explosion doors are provided in the casing directly over the air shaft.

ROBINSON VENTILATING CO.

Successor to J. R. ROBINSON

8044-5 JENKINS ARCADE BUILDING

PITTSBURGH, PENNA.

Products

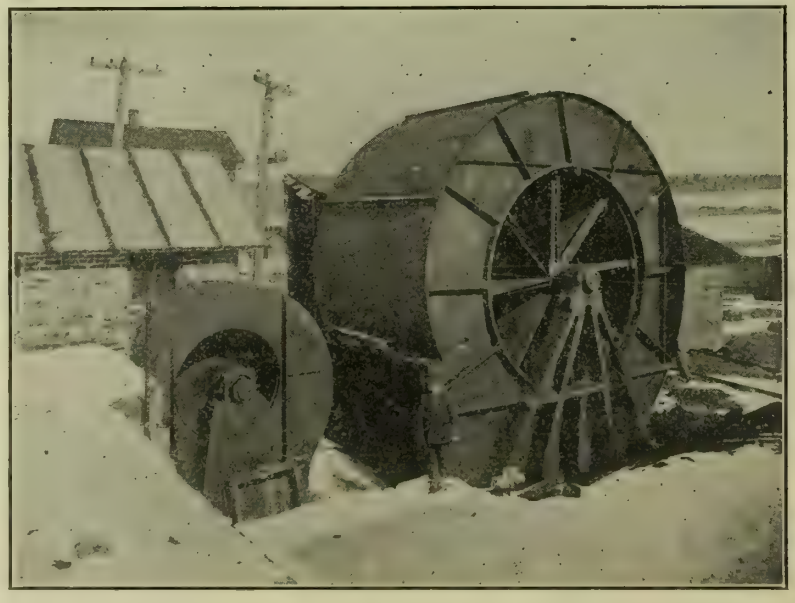
Mine Ventilating Machinery, Power House Blower Machinery, Machinery for the Ventilation of Buildings, and High Pressure Fans for Cupolas, Forges and Furnaces.

Robinson Fans

Robinson Fans are the latest development in fans, for mines, power houses, cupolas or for any purpose where economy of space or power is worth considering.

These fans are the result of careful designing and long years of experience.

Every mine requires ventilating apparatus especially adapted to it. A large part of our business consists of the replacement of machinery and equipment where mistakes have been made—where the machinery has been found to be wasteful and inefficient. We have been able to save from 10 to 60 per cent. of the power consumed by the fans replaced. The reason for this is that the years of study and experiment which we have carried on in this field have resulted in our designs being unequalled in point of economy of power, economy of space, volumetric capacity, manometric capacity and mechanical efficiency. We have adapted ventilating machinery to some of the most difficult mines in the country, under all conditions of service. Installations engineered by us have been most economical as to first cost, maintenance and the use of power. Our experience and engineering knowledge are at your service. You cannot buy a better fan than the Robinson Turbine Fan. And when we install a fan in your mine it will be one to exactly fit the necessities of that mine.



Cut No. 1

Cut No. 1 shows two fans at the Winburne Mine of the Pennsylvania Coal & Coke Company, Winburne, Pa. The large fan is one of the old Robinson type, made 15 years ago, and is operated by a steam engine. A special boiler was required for this fan, and an attendant night and day. The fan has been replaced by a modern Robinson Turbine Fan, driven by electric motor. The power is purchased from a public service corporation. The small fan is doing the same work that the large fan did, and is saving, through the purchased power, the wages of two attendants.



Cut No. 2.

Illustration No. 3 shows the remodeled fan house which gives the Federal Coal & Coke Co. two independent ventilating units, either one of which can be used as desired at a minute's notice in case one of the units requires repairs or attention, it can be shut down. With this equipment it makes this company sure of efficient ventillation at all times under all conditions.

Cut No. 4 shows a fan at the Newburg Shaft of Virginia-Maryland Coal Corporation, Newburg, W. Va. The Newburg Shaft is a high pressure mine and an error was made in installing a low pressure fan. The Robinson fan shown in the cut replaced this low pressure fan, and produces the required air with a great saving of power. The Robinson fan is 5′ 3″ diameter and is operated by a 150 H. P. steam engine. The fan displaced was one of the best modern steel fans 16′ in diameter with a 400 H. P. engine. It was able to produce only 70% of the volume of air that the Robinson fan is producing.

Cut No. 2 shows a Robinson Turbine Fan 8′ diameter driven by a Corliss engine that replaced a Capel fan 16′ diameter. The Robinson fan is doing approximately twice as much work as the old fan with the same power. Since this installation was made at this Federal mine, which is extremely gaseous, and the Company desired to make the mine perfectly safe at all times, and second ventilating fan was desired, the Capel fan was remodeled by the Robinson Ventilating Company, to make it suit the conditions of the mine. The result of this remodeling was to save largely in power. The remodeled fan produced over 100,000 cu. ft. per minute more air than the old fan.



Cut No. 3.



Cut No. 4.

The ventilation of mines is an engineering proposition, and these four illustrations show the benefits accruing to the owners of mines who employ expert ventilating engineers to make the fan installations.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

High Grade Chain Drives For All Purposes

New York	299 Broadway	Seattle	580 First Avenue South	San Francisco	N. D. Phelps, Sheldon Bldg.
Pittsburgh	1510 Park Building	Portland, Ore.	14th and Lovejoy Sts.	Birmingham	General Machinery Co.
Boston	49 Federal St.	Los Angeles	204 N. Los Angeles St.	John Millen & Son, Ltd.,	Montreal, Canada
St. Louis	Central National Bank Bldg.	Denver	Lindrooth, Shubart & Co.	Toronto, Can.,	Canada Link-Belt Co., Ltd.
Buffalo	698 Ellicott Square	Minneapolis	Link-Belt Supply Co.		
Wilkes-Barre	2nd National Bank Bldg.	Knoxville	D. T. Blakey		
Detroit	911 Dime Bank Bldg.	New Orleans	Whitney Supply Co.		
Cleveland	1304 Rockefeller Bldg.				

Link-Belt Silent Chain

is the ideal method of transmitting power—from prime move to machine, or from line to countershaft, for Pumps, Mine Fans, Lineshafts, etc., and any place around the mine where it is important to



Look for the Name on the Washers.
Look for the Liners in the Joints.

transmit power without slip or loss. It is as flexible as a belt, positive as a gear, and more efficient than either, (98.2% efficient on actual test). The success of the drive is due entirely to the superiority of its joint construction, which is patented, and



found in no other chain. See illustrations. The segmental liners or bushings, which are removable, extend across the entire width of the chain, thus doubling the bearing surface and having the bearing pressure on the joint. The bushings are case-hardened pin. The latter is free to, and does rotate with reference to the bushings and presents every particle of its surface for wear. As a result it wears uniformly, keeps round, and the chain maintains to the end its high initial efficiency. Transmits any power at any reasonable speed. A safety first means of transmitting power which combines the advantages of the leather belt and spur gear, and eliminates their disadvantages. Thousands in daily use under all conditions.



The best is none too good where human life depends on continuous operation.

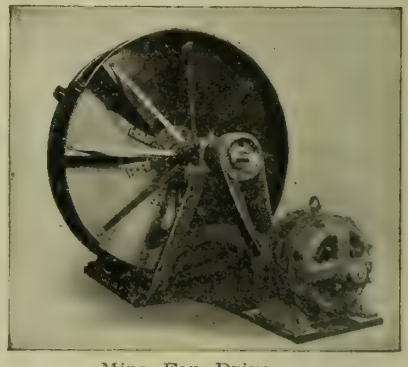
For driving Fans, Link-Belt Silent Chain permits of compact construction, and requires but a minimum of attention. It is positive, absolutely



Link-Belt Silent Chain Operating Mine Fan.

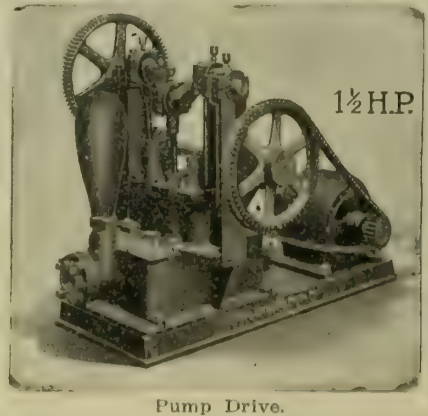
reliable, and can therefore be depended upon for this all-important work of supplying miners with fresh air. It is the "Safety First" means of transmitting power.

We have installed many drives for this service which have been in operation for eight years and longer. The only attention they have ever required is periodic oiling.



Mine Fan Drive.

Link-Belt Silent Chain is a reliable, compact, and highly efficient drive for any machinery around the mine. You can learn all about it by writing for 112-page Data Book No. 125. It contains information for every man who is interested in the economical transmission of power. Sent postpaid on request. Address nearest office. Or send for a Link-Belt service man to explain the advantages personally.



Pump Drive.

ESTABLISHED 1870

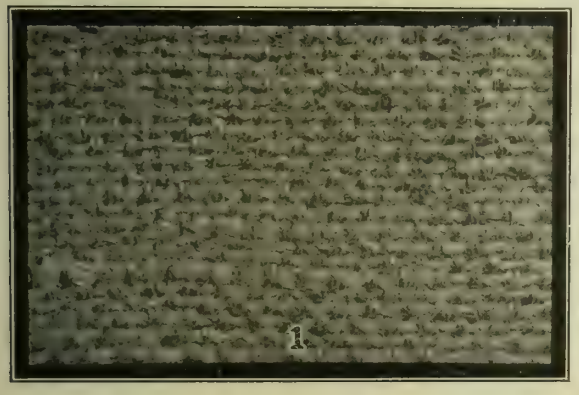
FULTON BAG & COTTON MILLS

MANUFACTURERS OF BRATTICE CLOTH

BROOKLYN, NEW YORK CITY, U. S. A.

Atlanta New Orleans St. Louis Dallas Oklahoma City

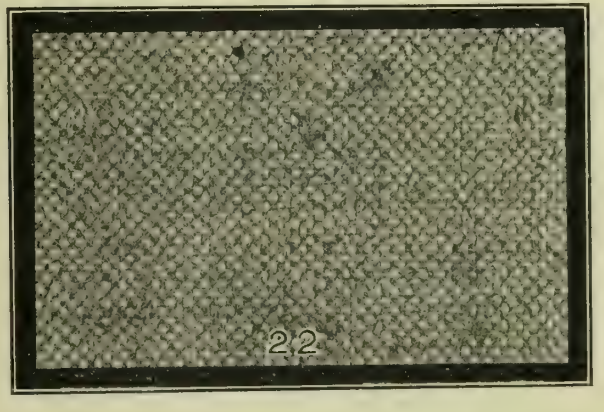
A Brattice Cloth that combines extreme efficiency and extreme economy is the Brattice Cloth for you to use. FFFF Brand possesses both qualities. It is made out of carefully selected fibres, closely woven, and Fireproofed by a chemically scientific process which renders it non-inflammable and at same time practically rot-proof.



FFFF No. 1 is a good Jute Brattice Cloth at a cheap price. A strong, heavy cloth, double warp, durable and non-inflammable. It is especially recommended for temporary brattices and for walls. Preferred to many other qualities sold at much higher prices.

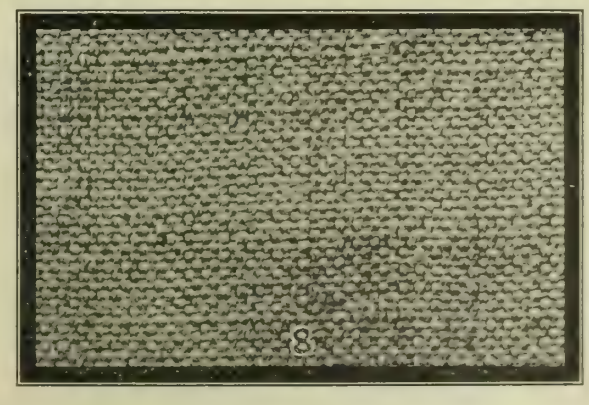
FFFF No. 22. A superior single warp and single weft closely woven fabric, made of selected jute yarns. We recommend this quality next to FFFF No. 8 and have sold it with considerable success in all coal fields for many years.

Always Demand FFFF Brand Best by Test



Always Demand FFFF Brand Best by Test

FFFF No. 8 is a non-inflammable Jute Duck constructed out of hard-twisted yarns, for strength, durability and closeness of weave. It makes an ideal Brattice Cloth. Its durability has been established by long years of use, not only in this country, but also in the British Coal Fields and throughout the entire world. The closeness of its weave makes it practically air-tight, thereby wasting the least possible amount of air. It is highly recommended by experts, mine superintendents and students of mine ventilation and efficiency.



Stocks Carried With Leading Jobbers In All Coal Fields

IF YOUR REGULAR JOBBER DOES NOT CARRY FFFF WRITE TO US.

We manufacture other qualities and will gladly send samples and prices.

NO MORE WAITING ON IMPORTATION ORDERS

PROMPT SHIPMENTS FROM OUR NEAREST FACTORY



HOISTING AND HAULAGE SECTION

Engineering Data

Specification data for Hoisting Engines.
Chart—Vertical unbalanced loads lifted by First Motions Hoisting Engines at various Steam Pressure with drums from 4 to 12 feet in diameter.
Chart—Showing Power Required to Haul Cars on various pitches.
Chart—Showing Piston speed in feet per minute
Chart—Capacity of face of winding Drums.
Chart—Amount of rope wound on drums of various diameters and faces.
Specification data for Haulage Engines.
Table—Tension on Wire Rope for Inclined Planes.
Chart—Rope speed in feet per minute.
Table—Bending and safe working stresses for Cast Steel Ropes (19 wires) running on sheaves of various diameters.
How to order Wire Rope.
Wire Rope Data (Hoisting).
Wire Rope Data (Haulage).

The following manufacturers have catalogue descriptions in this section:

Ottumwa Iron Works.
American Steel & Wire Co.
Falk Co.
Flory, S., Mfg. Co.
General Electric Co.
Hazard Mfg. Co.
Holmes, Robt., & Bros.
Leschen, A., & Sons Rope Co.
Lidgerwood Mfg. Co.
Macomber & Whyte Rope Co.
Orr & Sembower, Inc.
Pneumelectric Machine Co.
Roebling's, John A., Sons Co.
Southside Fdry. & Mch. Co.
Vulcan Iron Works.
Waterbury Co.
Wellman-Seaver-Morgan Co.
Westinghouse Electric & Mfg. Co.
Williamsport Wire Rope Co.
Wright Wire Co.

For additional descriptions of Hoistings and Haulage Equipment, not appearing in this section, Refer to Index of Products in front of the book.

Information Required for Shaft Hoists

Total height of lift (from bottom to dump).....

Weight of cages and whether self-dumping or platform type.....

Weight of empty car.....

Weight of loaded car (coal).....

Weight of loaded car (rock, if hoisted).....

Are men and material to be handled.....

Is hoist to be located at side or end of head frame

give center to center distance of head sheaves.....

Diameter of hoisting ropes preferred.....

Is operator to be located at hoist or in head frame.....

If hoist to be driven by A. C. motor specify voltage, phase and cycle. If to be driven by

D. C. motor give voltage.....

If hoist to be steam driven give steam pressure at throttle or steam pressure carried on boilers

and distance from boilers to hoist.....

Information Required for Slope Hauls

Maximum length of haul.....

Grades in percent as near as possible with length of each and specify curves, if any.....

Number of cars per trip and speed desired or output

in specified time in tons.....

Weight of empty car.....

Weight of loaded car.....

Are cars equipped with roller bearing wheels or plain.....

If hoist to be driven by A. C. motor specify voltage, phase and cycle. If to be driven by

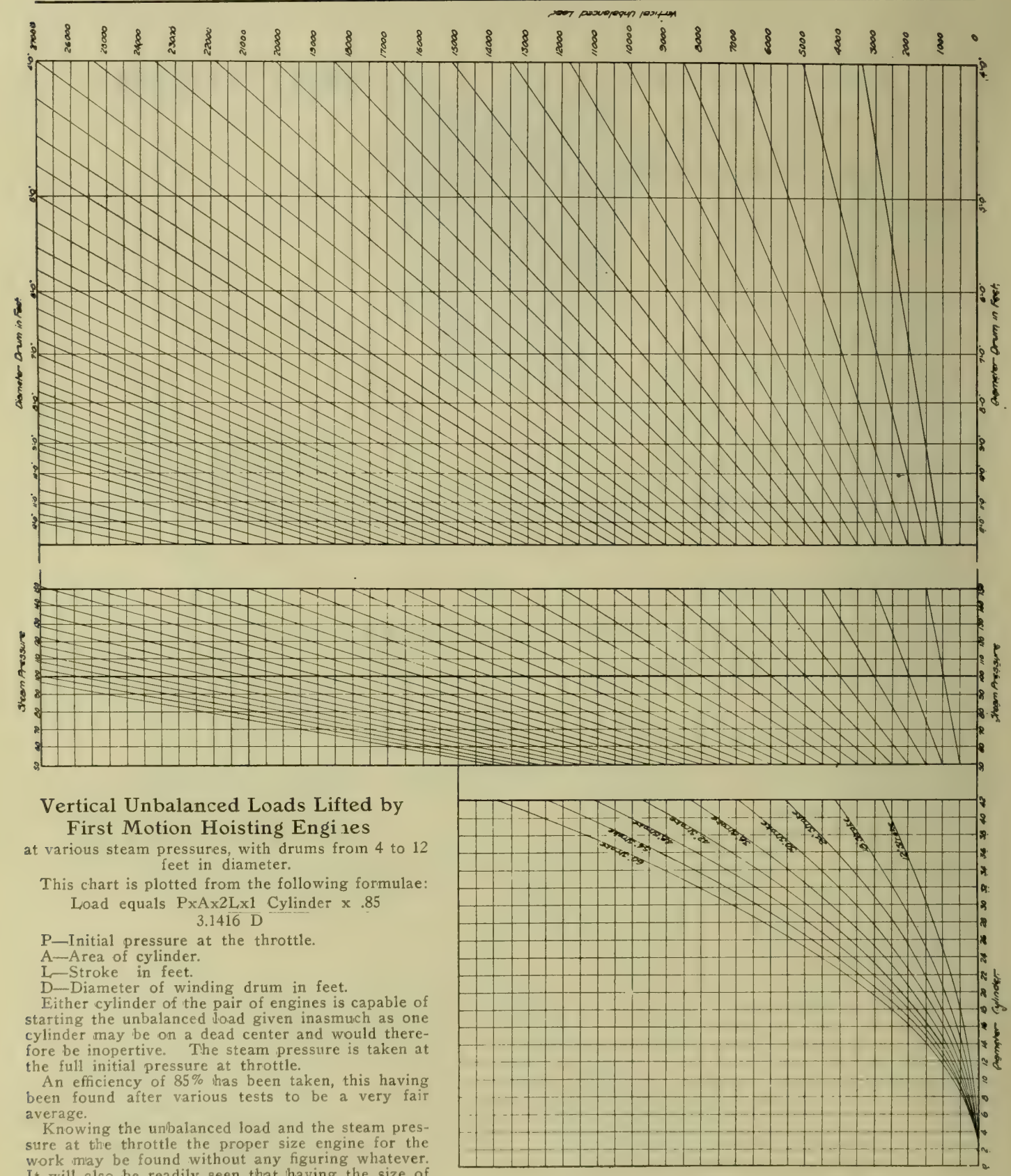
D. C. motor give voltage.....

.....

.....

If hoist to be steam driven give steam pressure at throttle or steam pressure carried on boilers

and distance from boilers to hoist.....



Vertical Unbalanced Loads Lifted by First Motion Hoisting Engines

at various steam pressures, with drums from 4 to 12 feet in diameter.

This chart is plotted from the following formulae:

$$\text{Load equals } \frac{PxAx2Lx1 \text{ Cylinder x } .85}{3.1416\ D}$$

P—Initial pressure at the throttle.
A—Area of cylinder.
L—Stroke in feet.
D—Diameter of winding drum in feet.

Either cylinder of the pair of engines is capable of starting the unbalanced load given inasmuch as one cylinder may be on a dead center and would therefore be inopertive. The steam pressure is taken at the full initial pressure at throttle.

An efficiency of 85% has been taken, this having been found after various tests to be a very fair average.

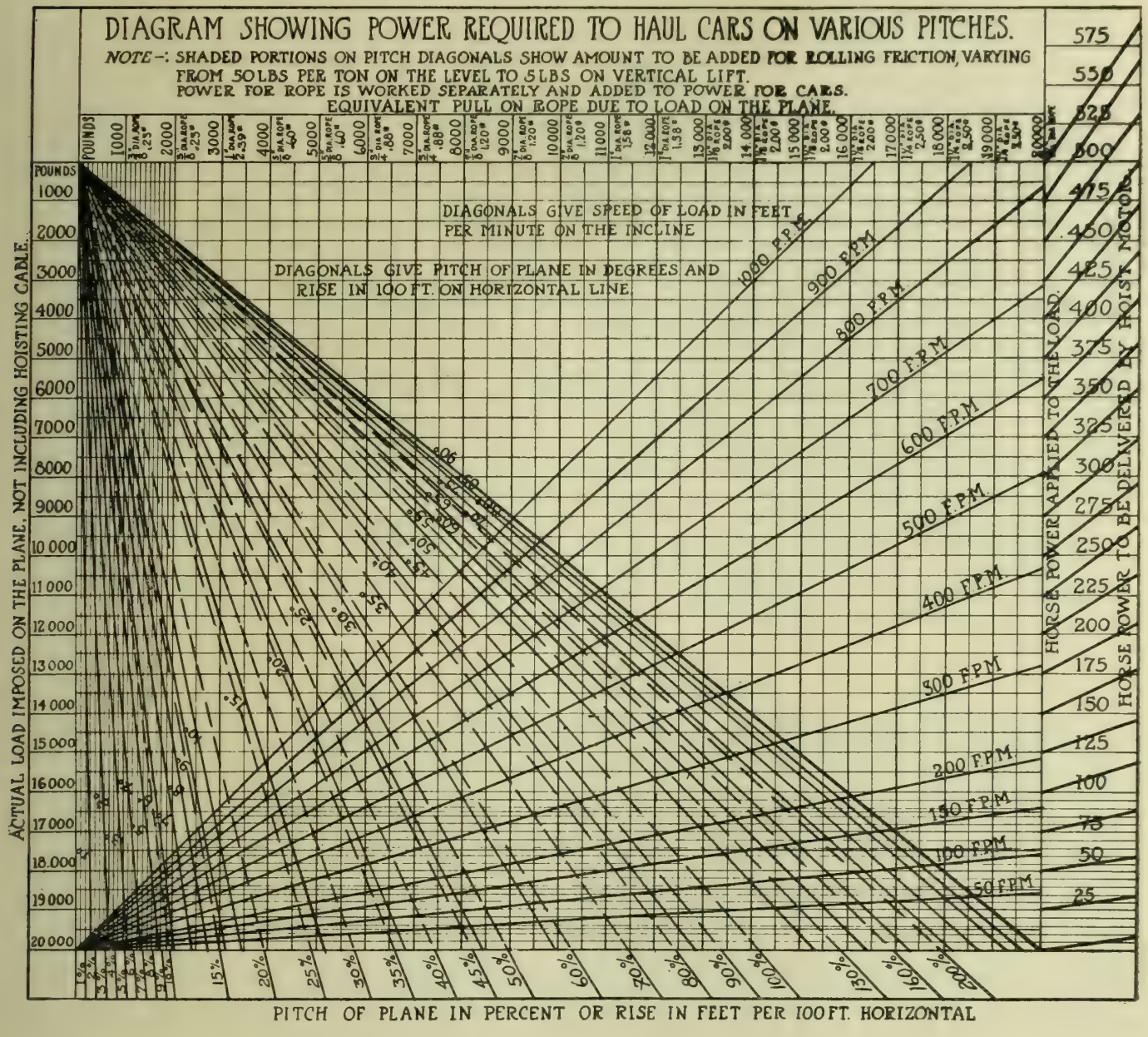
Knowing the unbalanced load and the steam pressure at the throttle the proper size engine for the work may be found without any figuring whatever. It will also be readily seen that having the size of engine cylinders the vertical load that can be lifted by them may also be found for any steam pressure and various diameters of drum.

Example: Find the size engine capable of handling a vertical unbalanced load of 12,000 with 100 pounds steam pressure at the throttle.

The rope manufacturers give the working load for 1" rope as 6.8 tons. However, in actual practice, for this load a 1-¼" rope would probably be used and wound on, say, an 8' 0" diameter drum.

Following the horizontal line marked 12,000 until it is intersected by the diagonal line at or about the vertical line representing an 8' 0" diameter drum; then follow the diagonal line down to left side of chart; follow horizontal line across until it is intersected by diagonal line at or about the line representing 100 pounds steam pressure; follow this diagonal line as previously described to left side of chart; follow horizontal line until proper combination of stroke and diameter are found. For the work in hand the following engines would be satisfactory: viz: 24x48", 26x42" or 28x36"; the 24x48" size would probably be selected.

Courtesy Vulcan Iron Works.



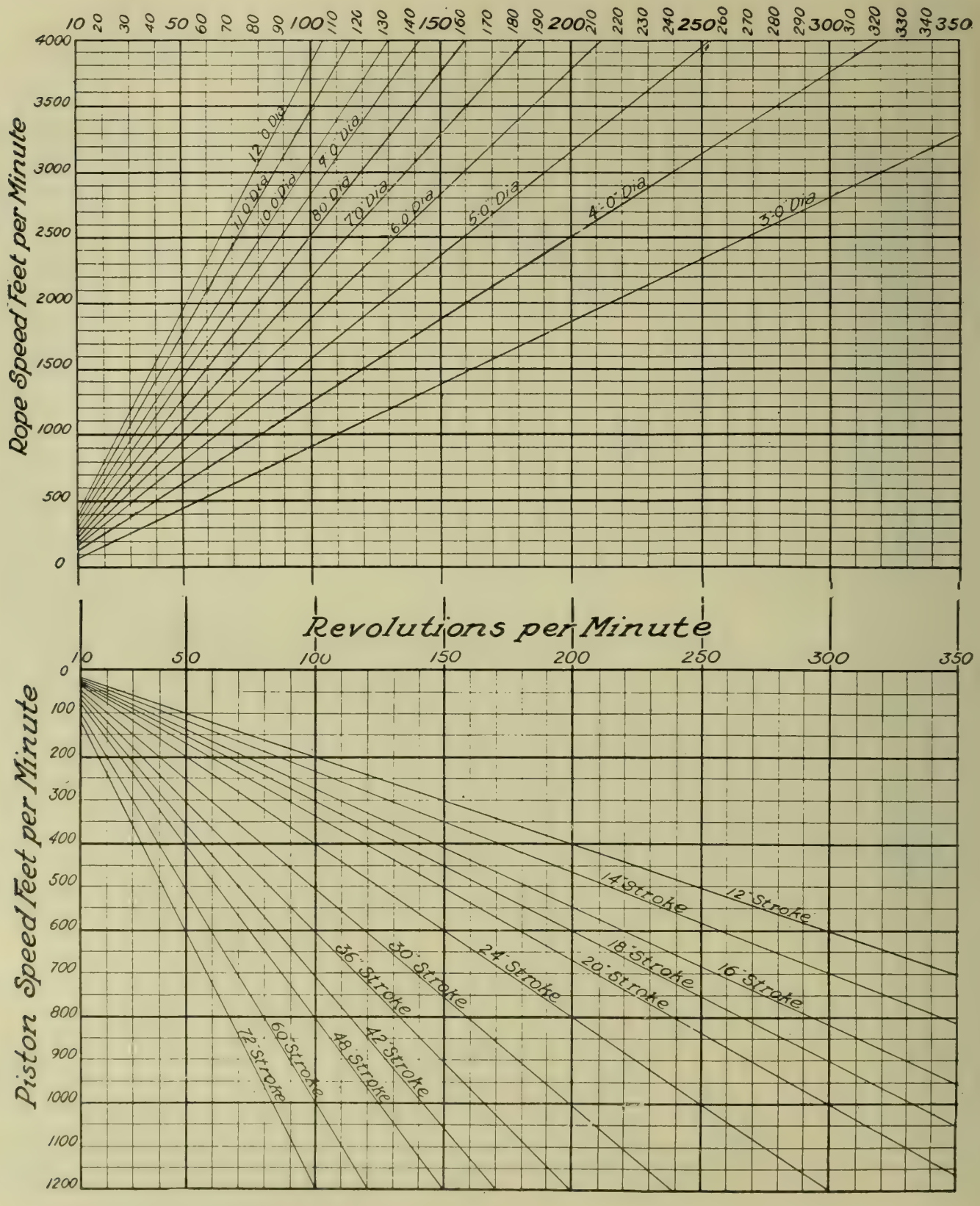
Power Required to Haul Cars on Various Pitches

It is desired to haul two loaded cars, each weighing 6,000 pounds up a plane 1,000 feet long, having a pitch of 40° from the horizontal, at a maximum rope speed of 500 feet per minute. What is the equivalent rope pull? What is the brake horse power required to handle the load?

Example: Two loaded cars weighing 6,000 pounds each equals a load of 12,000 pounds exclusive of winding rope. Follow the horizontal line representing 12,000 on the chart until it is intersected by the diagonal line representing 40°. Directly above this point of intersection will be found the rope pull, which in this case is 7,900 pounds. We also find that a ¾" rope would be satisfactory and that this size rope weighs .88 pounds per foot. Following down this imaginary line representing 7,900 pounds until it is intersected by the diagonal line representing 500 feet per minute rope speed, we read 120 horse power applied to the load, or the brake horse power required. The horse power to be delivered by this hoist motor would be 141; that is, based on an efficiency of 85% for the entire outfit.

We found that ¾" rope would be required and also that this size rope weights .88 pounds per foot; 1,000 feet of rope at .88 pounds equals 880 pounds. By working this out the same way we did for the loaded cars we find it equivalent to nine horse power, which should be added to the 141 horse power, making a total of 150 horse power.

Courtesy Vulcan Iron Works.



Piston Speed, Etc.

In the foregoing proposition assume an average piston speed of 600 feet per minute.

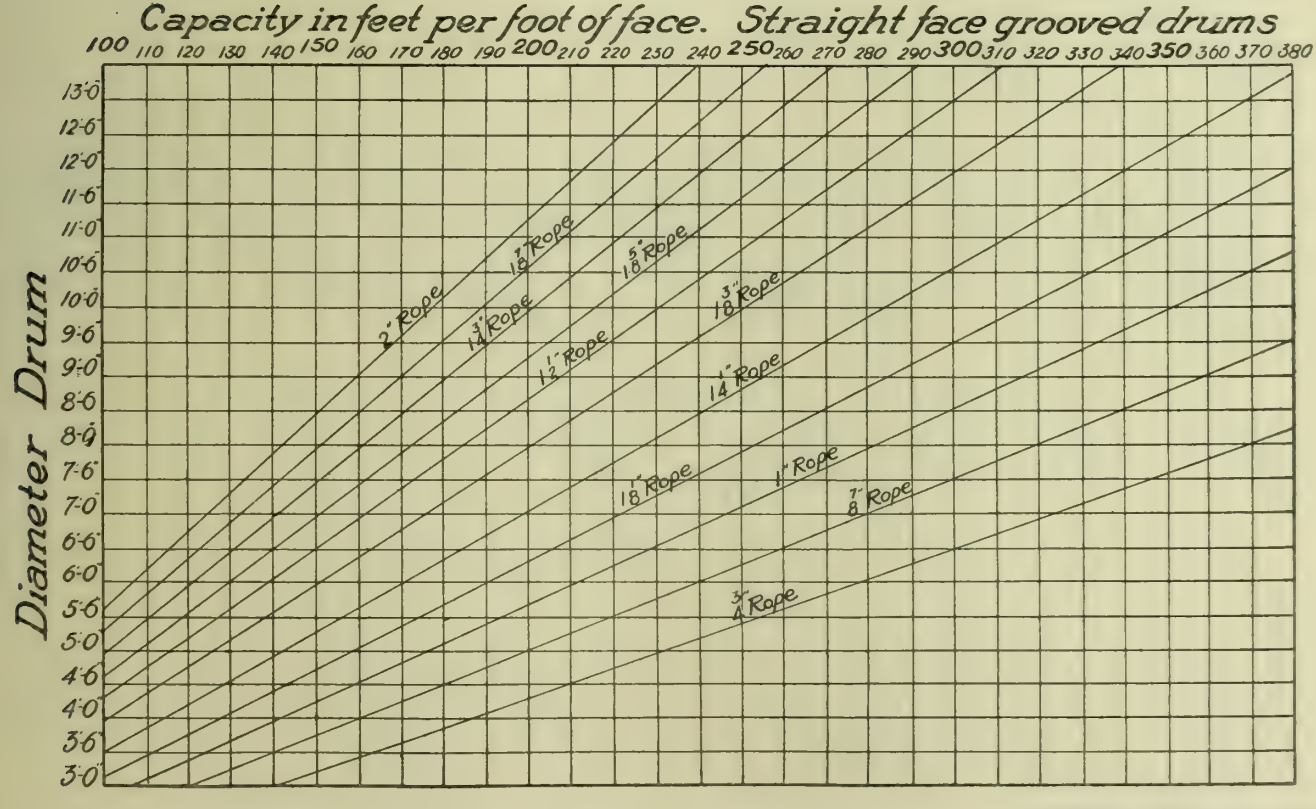
Following the horizontal line at 600 until it is intersected by diagonal line representing 8' 0" drum; following this line to the upper section until it is intersected by diagonal line representing 48" stroke; by following the horizontal line to side of chart the rope speed is found to be 1,890 feet per minute.

Courtesy Vulcan Iron Works.

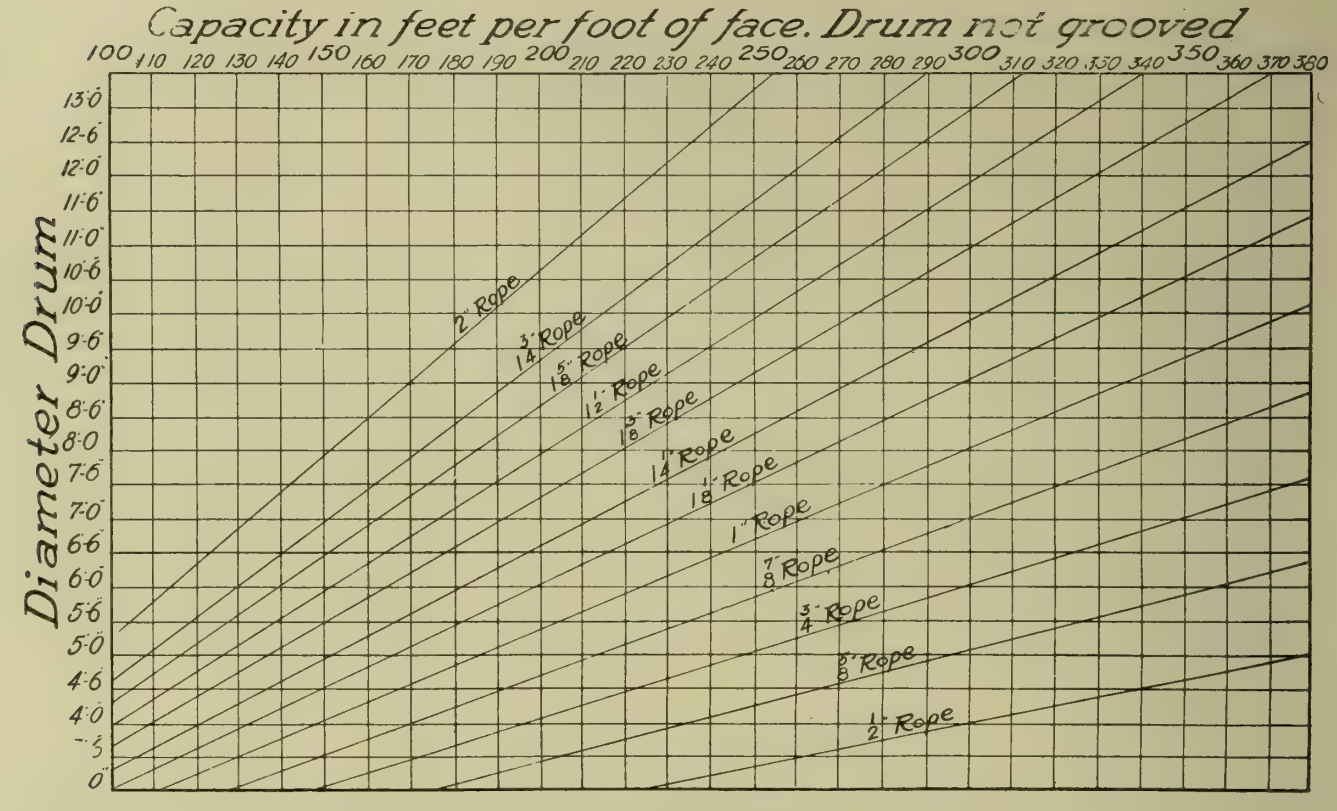
Face of Winding Drum.

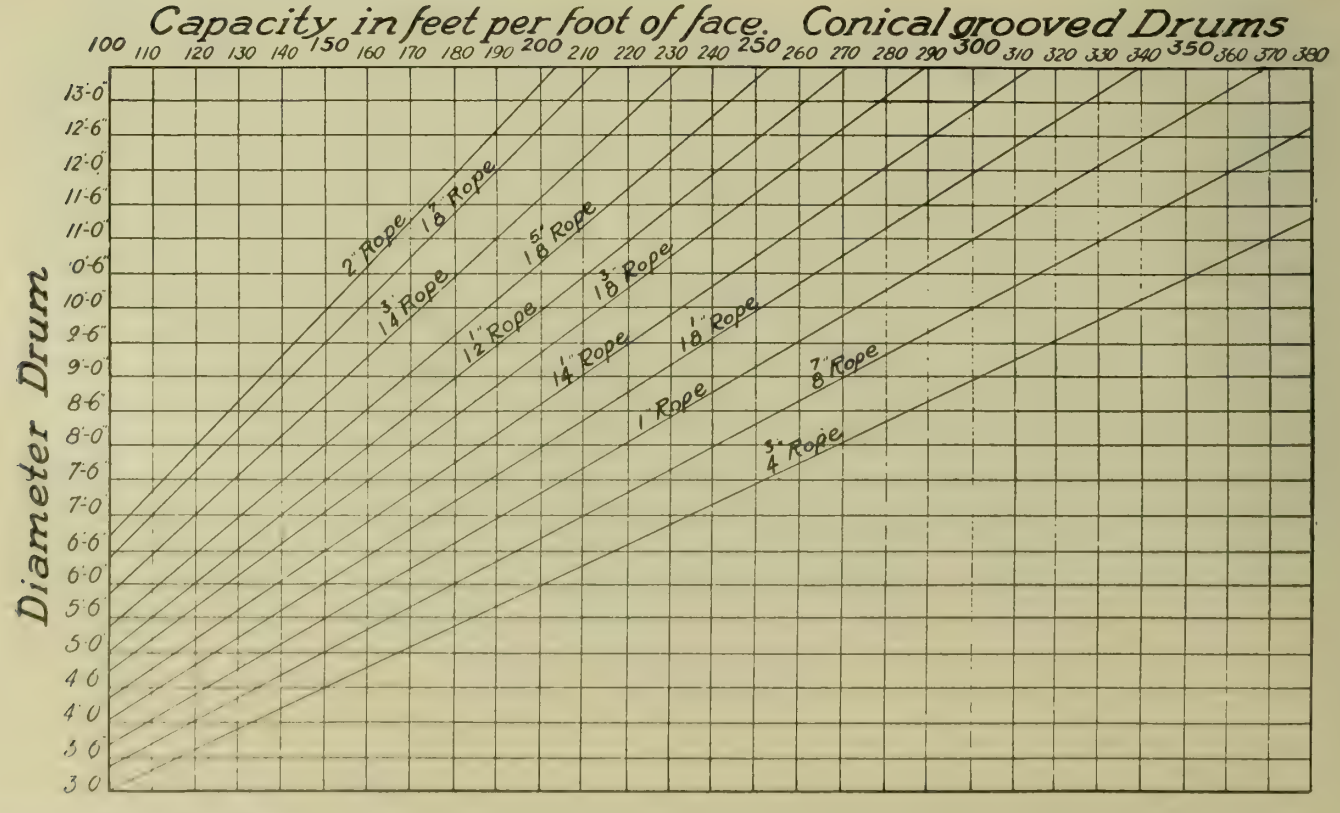
As previously stated, our drum is 8′ 0″ diameter, rope 1-¼″ diameter and shaft 475 feet deep. Refer to the chart marked "Straight Face Grooved Drums." We find that an 8′ 0″ diameter drum will wind 227 feet per foot face. Our drum would therefore have to be, say, 2′ 6″ face, which would allow a sufficient number of grooves at one end of drum for fastening rope.

The charts on straight face drums not grooved, and conical grooved drums would, of course, be used in the same manner as illustrated above. The diameter used for conical drums, however, should be the mean diameter.

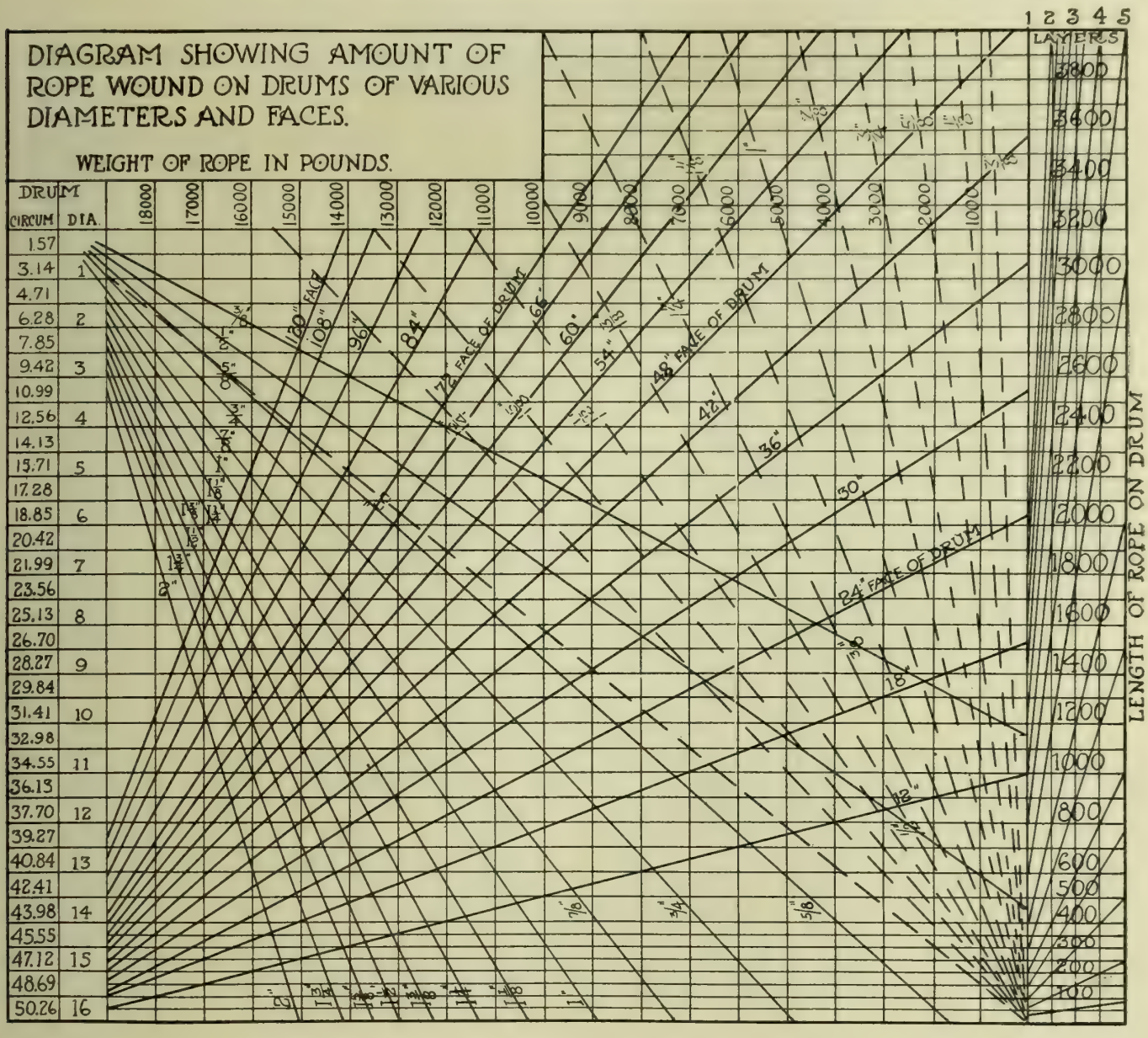


Courtesy Vulcan Iron Works.





Courtesy Vulcan Iron Works.

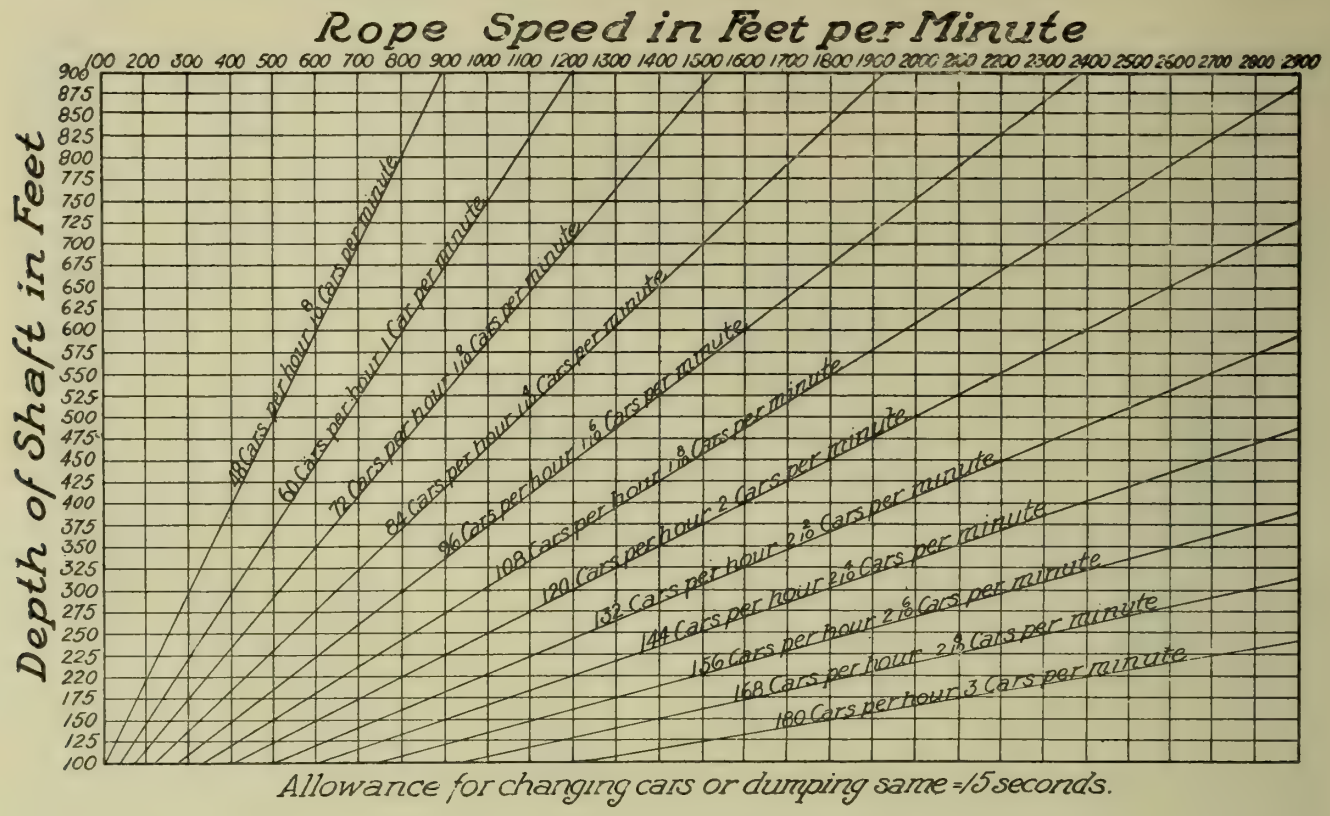


Courtesy Vulcan Iron Works.

Tension on Wire Rope for Incline Planes

At 90°	the tension on rope is	2,000	lbs.	for	2,000	lbs.	load.	A grade of	1	foot in 100 feet equals	¾° or 45′
" 80°	" "	"	"	"	1,970	"	"	"	2	feet " " " "	1°-10′
" 70°	" "	"	"	"	1,880	"	"	"	2½	" " " " "	1°-30′
" 60°	" "	"	"	"	1,732	"	"	"	3	" " " " "	1°-45′
" 50°	" "	"	"	"	1,552	"	"	"	3½	" " " " "	2°
" 45°	" "	"	"	"	1,414	"	"	"	4	" " " " "	2⅓°
" 42½°	" "	"	"	"	1,350	"	"	"	5	" " " " "	3°
" 40°	" "	"	"	"	1,286	"	"	"	6	" " " " "	3½°
" 37½°	" "	"	"	"	1,216	"	"	"	7	" " " " "	4°
" 35°	" "	"	"	"	1,148	"	"	"	8	" " " " "	4¾°
" 32½°	" "	"	"	"	1,074	"	"	"	10	" " " " "	5¾°
" 30°	" "	"	"	"	1,000	"	"	"	12¼	" " " " "	7°
" 27½°	" "	"	"	"	922	"	"	"	14	" " " " "	8°
" 25°	" "	"	"	"	846	"	"	"	16	" " " " "	9°
" 22½°	" "	"	"	"	764	"	"	"	18	" " " " "	10 1/10°
" 20°	" "	"	"	"	684	"	"	"	20	" " " " "	11 1/3°
" 17½°	" "	"	"	"	600	"	"	"	23	" " " " "	13°
" 15°	" "	"	"	"	518	"	"	"	25	" " " " "	14°
" 12½°	" "	"	"	"	432	"	"	"	26¾	" " " " "	15°
" 10°	" "	"	"	"	348	"	"	"	30½	" " " " "	17°
" 8°	" "	"	"	"	278	"	"	"	36	" " " " "	20° (19°-40′)
" 7°	" "	"	"	"	242	"	"	"	46½	" " " " "	25°
" 6°	" "	"	"	"	208	"	"	"	57¾	" " " " "	30°
" 5°	" "	"	"	"	174	"	"	"	75	" " " " "	35°
" 4°	" "	"	"	"	138	"	"	"	84	" " " " "	40°
" 3°	" "	"	"	"	104	"	"	"	100	" " " " "	45°
" 2°	" "	"	"	"	70	"	"				
" 1°	" "	"	"	"	34	"	"				

Courtesy Hazard Mfg. Co.



Allowance for changing cars or dumping same =15 seconds.

Cars per Hour

Assume that the shaft is 475 feet deep. We have found that the engines in question will give an average rope speed of 1,890 feet per minute, say 1,900 feet. By referring to this chart it will be readily seen that from a shaft 475 feet deep we can get out two car per minute, or 120 cars per hour. This chart is based on an allowance of one quarter of a minute for changing cars and a double compartment shaft.

Courtesy Vulcan Iron Works.

Bending and Safe Working Stresses for Cast Steel Ropes (19 Wires) Running on Sheaves and Drums of Various Diameters.

(Safe Stress taken one-third of Ultimate Stress.)

Size.	Safe stress.	120″		96″		72″		48″		36″		30″		24″	
		Bending	Working	Bending	Working	Bending	Working	Bending	Working	Bending	Working	Bending	Working	Bending	Working
3/8″	3333	283	3050	353	2980	469	2864	698	2635	924	2409	1102	2231	1366	1967
1/2″	5867	733	5134	913	4954	1212	4655	1800	4067	2376	3491	2829	3038	3495	2372
5/8″	9067	1506	7561	1876	7191	2485	6582	3680	5387	4847	4220	5759	3308	7095	1972
3/4″	12933	2534	10399	3153	9780	4173	8760	6165	6768	8101	4832	9609	3324	11807	1126
7/8″	17333	3943	13390	4886	12447	6481	10852	9556	7777	12528	4805	14835	2498		
1″	22667	6059	16608	7528	15139	9937	12730	14614	8053	19113	3554	22589			
1 1/8″	28000	8474	19526	10523	17477	13872	14128	20357	7643	26556	1444				
1 1/4″	33333	11452	21881	14209	19124	18713	14620	27400	5933						
1 3/8″	41333	15545	25788	19272	22061	25350	15983	37028							
1 1/2″	48000	19906	28094	24662	23338	32403	15597								
1 5/8″	56000	25005	30995	30957	25043	40629	15371								
1 3/4″	64000	31689	32311	39203	24797	49919	14081								
2″	82667	46285	36382	57183	25484	74795	7872								

By Courtesy of the Lehigh and Wilkes-Barre Coal Co.

WIRE ROPE DATA

Mining Rope Arrangements

For vertical shaft work it is customary to use almost universally the 6x19 construction rope. The cages are usually arranged in pairs so that as one is lowered the other is raised this being known as the balanced hoist system. Two types of hoisting drums are in common use, the flat drum and the conical drum, the latter being designed to give a slower starting speed when the cage is lifted from the bottom of the mine.

The simplest arrangement is for the ropes to pass directly from the drum to two head sheaves carried on a wooden or steel tower, each sheave lined with the center of that part of the drum on which the rope has to wind. It is customary with either the flat or conical drum to attach one rope to the under side of the drum and the other rope to the top of the drum, leaving several turns on the drum when the cage is resting on the bottom of the mine shaft. The names "underwind" and "overwind" are applied to these two ropes.

Conical drums are used more frequently on shorter mine ropes, but unless the smaller end has nearly as large a diameter as would be used for a flat drum, the rope service may not be much better than with a flat drum. It is a debatable point as to which type of drum is the better.

We recommend wherever possible that installations of mine hoist ropes be made with as few bends as possible. In case a shaft has to be changed or if the engine room cannot be located, so as to carry the rope, a turn sheave may be used with suitalbe lead and intermediate supporting sheaves to carry the rope.

Plow Steel Hoisting Rope

Standard Strengths, Adopted May 1, 1910

6 Strands—19 Wires to the Strand—1 Hemp Core

Diameter in Inches	Circumference in Inches	Approximate Weight per Foot in Pounds	Approximate Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
2¾	8⅝	11.95	275	55	11
2½	7⅞	9.85	229	46	10
2¼	7⅛	8	186	37	9
2	6¼	6.3	140	28	8
1⅞	5¾	5.55	127	25	8
1¾	5½	4.85	112	22	7
1⅝	5	4.15	94	19	6.5
1½	4¾	3.55	82	16	6
1⅜	4¼	3	72	14	5.5
1¼	4	2.45	58	12	5
1⅛	3½	2	47	9.4	4 5
1	3	1.58	38	7.6	4
⅞	2¾	1.20	29	5.8	3.5
¾	2¼	.89	23	4.6	3
⅝	2	.62	15.5	3.1	2.5
9/16	1¾	.50	12.3	2.4	2.25
½	1½	.39	10	2	2
7/16	1¼	.30	8	1.6	1.75
⅜	1⅛	.22	5.75	1.15	1.50
5/16	1	.15	3.8	.76	1.25
¼	¾	.10	2.65	.53	1

Crucible Cast Steel Hoisting Rope

Standard Strengths, Adopted May 1, 1910

6 Strands—19 Wires to the Strand—1 Hemp Core

Diameter in Inches	Circumference in Inches	Approximate Weight per Foot in Pounds	Approximate Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
2¾	8⅝	11.95	211	42.2	11
2½	7⅞	9.85	170	34	10
2¼	7⅛	8	133	26.6	9
2	6¼	6.30	106	21.2	8
1⅞	5¾	5.55	96	19	8
1¾	5½	4.85	85	17	7
1⅝	5	4.15	72	14.4	6.5
1½	4¾	3.55	64	12.8	6
1⅜	4¼	3	56	11.2	5.5
1¼	4	2.45	47	9.4	5
1⅛	3½	2	38	7.6	4.5
1	3	1.58	30	6	4
⅞	2¼	1.20	23	4.6	3.5
¾	2¼	.89	17.5	3.5	3
⅝	2	.62	12.5	2.5	2.5
9/16	1¾	.50	10	2	2.25
½	1½	.89	8.4	1.68	2
7/16	1¼	.30	6.5	1.30	1.75
⅜	1⅛	.22	4.8	.96	1.50
5/16	1	.15	3.1	.62	1.25
¼	¾	.10	2.2	.44	1

Extra Strong Crucible Cast Steel Hoisting Rope

Standard Strengths, Adopted May 1, 1910

6 Strands—19 Wires to the Strand—1 Hemp Core

Diameter in Inches	Circumference in Inches	Approximate Weight per Foot in Pounds	Approximate Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
2¾	8⅝	11.95	243	48 6	11
2½	7⅞	9.85	200	40	10
2¼	7⅛	8	160	32	9
2	6¼	6.3	123	24.6	8
1⅞	5¾	5.55	112	22.4	8
1¾	5½	4.85	99	19.8	7
1⅝	5	4.15	83	16.6	6.5
1½	4¾	3.55	73	14.6	6
1⅜	4¼	3	64	12.8	5.5
1¼	4	2.45	53	10.6	5
1⅛	3½	2	43	8.6	4.5
1	3	1.58	34	6.80	4
⅞	2¼	1.20	26	5.20	3.5
¾	2¼	.89	20.2	4.04	3
⅝	2	.62	14	2.80	2.5
9/16	1¾	.50	11.2	2.24	2.25
½	1½	.39	9.2	1.84	2
7/16	1¼	.30	7.25	1.45	1 75
⅜	1⅛	.22	5.30	1.06	1.50
5/16	1	.15	3.50	.70	1.25
¼	¾	.10	2.48	.49	1

Courtesy American Steel & Wire Co.

WIRE ROPE DATA

Mine haulage systems are very widely different one from another, so much so that it may almost be said that there are hardly any two alike. At the same time there are in common use three leading systems known respectively as

1. Endless Haulage Rope System.
2. Tail Rope System.
3. Gravity Inclined Plane.

1. The endless system consists of a wire rope usually 6x7 construction, spliced endless with small cars gripped on to the rope at regular intervals either singly or in groups of two or three. Two kinds of drum driving arrangements are usually employed known as the elliptical and the figure 8 style respectively. The elliptical arrangement is preferable to the figure 8 as the rope in the latter case is subjected to reverse bending on the drums. Suitable slip rings should always be used on drums to equalize the tension of the different winds of rope, and a tension carriage with counterweight is also necessary. Position of engine and driving drums is usually dependent upon the location of pit mouth. Slow speed of about 3 to 4 miles per hour is the average of this system.

2. Tail rope systems consist of two ropes known respectively as head line and tail line, the latter usually being about double the length of the former. Each rope is carried upon a separate drum and it differs from the endless system in that its operation is intermittent and the cycle of operations is for the head line to pull out a trip of about fifty loaded cars at a speed of about ten miles per hour. The time taken for the trip is dependent upon the length of the headline. The tail line is always attached to the rear car of the trip and as soon as the loaded cars have run to the tipple by gravity, an empty trip of cars is pulled back into the mine by the tail line while the head line is at the same time attached to the front end of the train. The train of loaded cars or empty cars as the case may be, is thus always under perfect control whether coming from the mine or returning to it.

Plow Steel
Transmission, Haulage or Standing Rope

Standard Strengths, Adopted May 1, 1910

6 Strands—7 Wires to the Strand—1 Hemp Core

Diameter in Inches	Circumference in Inches	Approximate Weight per Foot in Pounds	Approximate Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
1½	4¾	3.55	82	16.4	11
1⅜	4¼	3	72	14.4	10
1¼	4	2.45	60	12	9
1⅛	3½	2	47	9.4	8
1	3	1.58	38	7.6	7
⅞	2¾	1.20	31	6.2	6
¾	2¼	.89	23	4.6	5
11/16	2⅛	.75	18	3.6	4¼
⅝	2	.62	16	3.2	4½
9/16	1¾	.50	12	2.4	4
½	1½	.39	10	2	3½
7/16	1¼	.30	7	1.4	3
⅜	1⅛	.22	5.9	1.2	2¾
5/16	1	.15	4.4	.88	2¼
9/32	⅞	.12½	3.4	.68	1¾

Crucible Cast Steel Transmission, Haulage or Standing Rope

Standard Strengths, Adopted May 1, 1910

6 Strands—7 Wires to the Strand—1 Hemp Core

Diameter in Inches	Circumference in Inches	Approximate Weight per Foot in Pounds	Approximate Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
1½	4¾	3.55	63	12.6	11
1⅜	4¼	3	53	10.6	10
1¼	4	2.45	46	9.2	9
1⅛	3½	2	37	7.4	8
1	3	1.58	31	6.2	7
⅞	2¾	1.20	24	4.8	6
¾	2¼	.89	18.6	3.7	5
11/16	2⅛	.75	15.4	3.1	4¼
⅝	2	.62	13	2.6	4½
9/16	1¾	.50	10	2	4
½	1½	.39	7.7	1.5	3½
7/16	1¼	.30	5.5	1.1	3
⅜	1⅛	.22	4.6	.92	2¾
5/16	1	.15	3.5	.70	2¼
9/32	⅞	.12½	2.5	.50	1¾

Extra Strong Crucible Cast Steel Transmission, Haulage or Standing Rope

Standard Strengths, Adopted May 1, 1910

6 Strands—7 Wires to the Strand—1 Hemp Core

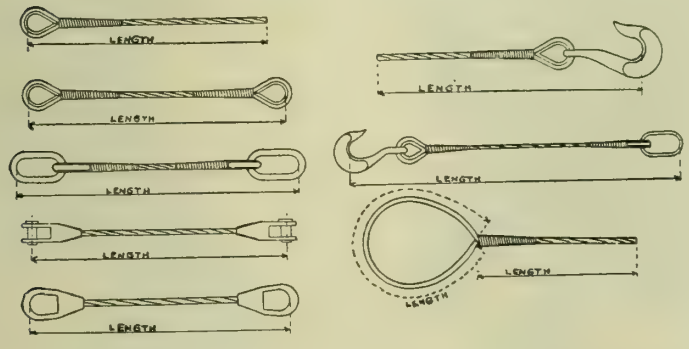
Diameter in Inches	Circumference in Inches	Approximate Weight per Foot in Pounds	Approximate Strength in Tons of 2000 Pounds	Proper Working Load in Tons of 2000 Pounds	Diameter of Drum or Sheave in Feet Advised
1½	4¾	3.55	73	14.6	11
1⅜	4¼	3	63	12.6	10
1¼	4	2 45	54	10.8	9
1⅛	3½	2	43	8.6	8
1	3	1.58	35	7	7
⅞	2¾	1.20	28	5.6	6
¾	2¼	.89	21	4.2	5
11/16	2⅛	75	16.7	3.3	4¼
⅝	2	62	14.5	2.9	4½
9/16	1¾	50	11	2.2	4
½	1½	.39	8.85	1.8	3½
7/16	1¼	.30	6.25	1.25	3
⅜	1⅛	.22	5.25	1.05	2¾
5/16	1	.15	3.95	79	2¼
9/32	⅞	12½	2.95	59	1¾

Courtesy American Steel & Wire Co.

How to Order Wire Rope

State length, size, diameter (or circumference), quality, number of strands, number of wires in the strand, and whether hemp center or wire center is wanted, also whether bright or galvanized is desired, e. g., 750 feet long, 1⅛ inches in diameter, plow steel hoisting rope, six strands, nineteen wires, hemp center, one piece.

If rope is to be equipped with thimbles, sockets, hooks, links, loops or other fittings, state the length from the pull of thimble, socket, hook, link, loop, etc., to end of the rope. Where fittings are to be put on each end, be sure and state the length from pull to pull of fittings.



If in doubt as to the material to be used, the conditions under which the rope operates should be given or a sample of rope that is satisfactory submitted so that the proper quality and construction may be furnished.

If possible, submit a rough sketch with the order, or inquiry showing the size and relative position of the sheaves, together with the figures of maximum load in pounds. This greatly facilitates a complete understanding of the requirements which the rope must fill.

S. FLORY MANUFACTURING CO.

General Office and Works

BANGOR, PENNA

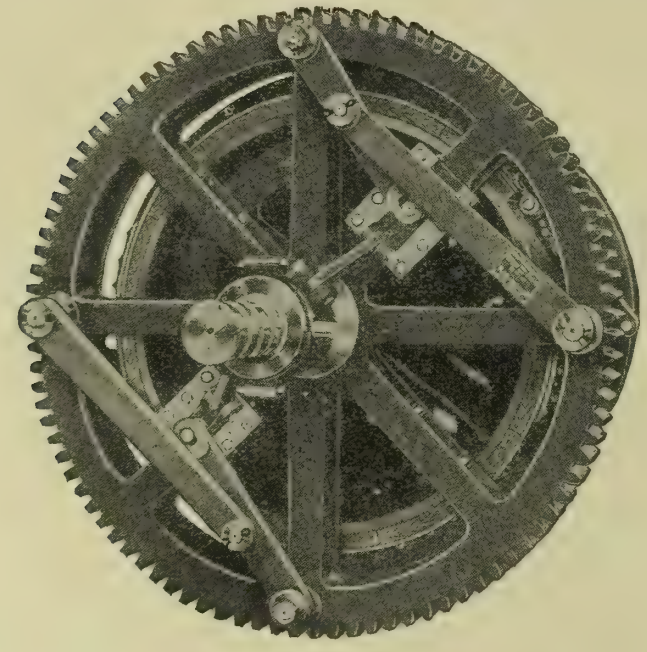
Flory Products---Steam and Electric For Economy and Dependability

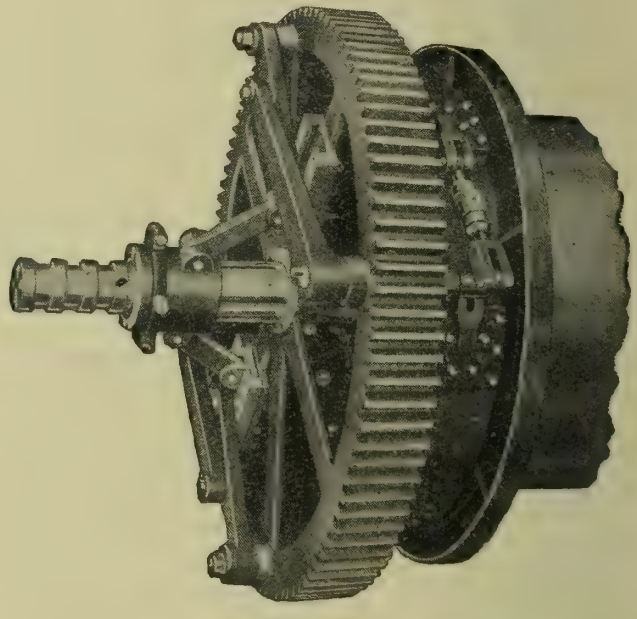
Products

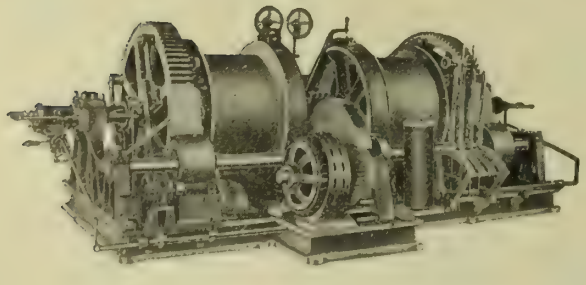
Since 1878 we have manufactured Mining Hoists to meet all conditions and requirements, using Cone and Band Friction, operated by steam, air or hand. Wood or Asbestos Brakes operated by steam, air or hand. The **Flory Hoist** has never failed. Our guarantee goes with every hoist. Give us an opportunity to submit our prices before you buy. We can supply your requirements satisfactorily as well as economically.

The Werner (Patented) Band Friction

A distinctive feature. Used only on **Flory Hoists.** The Werner Band Friction transmits its load directly from the gear to the Friction Ring on the Drum, thereby eliminating all tortional stress in the Drum Shaft. For simplicity, perfect balance, ease and rapidity of operation and maximum efficiency, it is unexcelled by any other type. It has been tested in the hardest slope and cage operations to perfect satisfaction of the users.



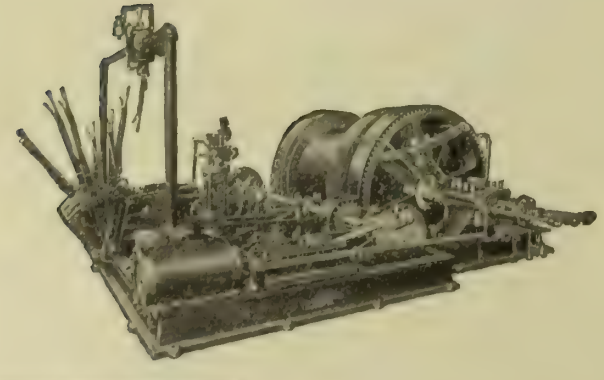




Werner Patent Band Friction, Double Drum Electric Hoist

For Tail-Rope Haulage, Double Shafts, Inclines, etc.

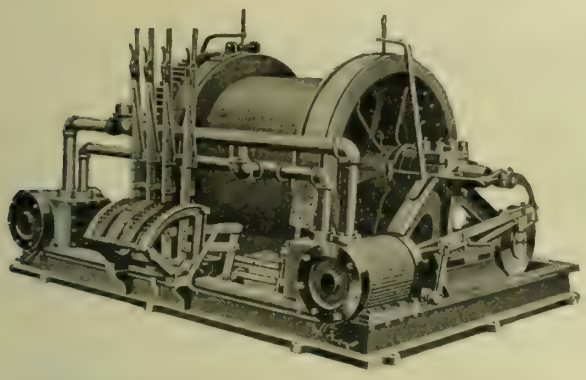
The drums are placed side by side with central bearing. Each drum fitted with our standard brake and dial indicator, Asbestos brakes can be supplied where desired. Frictions operated by air. The air equipment is operated by electricity. This type of hoist can be furnished with any type motor, D. C. or A. C., up to 600 H. P.



Werner Patent Band Friction, Single Drum Steam Hoist

For Mines, Incline Planes, Slopes, etc.

This engraving represents our Single Drum, Double Cylinder, Reversible Link Motion Hoisting Engine. The drum is provided with two powerful asbestos band brakes, one operated by steam, the second as an emergency, with which the load can be held suspended at any point of the lift. The friction is steam operated. Piston slide valves. All levers placed in a battery convenient to the operator. We build them up to 20 x 24 cylinders.

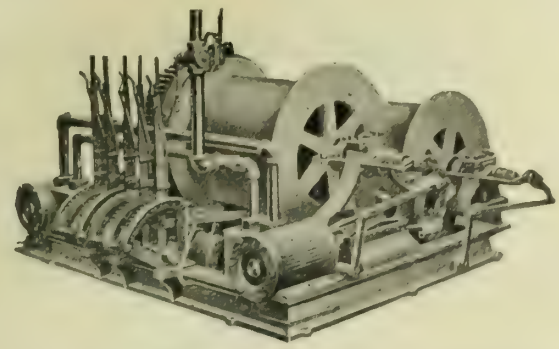


Double Cylinder, Single Friction Drum, Link Engine. Adaptation: Mines, Shafts, Inclines, Etc.

This engine is specially adapted for hoisting where reverse motion is required. It is fitted with one wood lined differential brake and one asbestos block brake.

TABLE OF SIZES, ETC.

Size Number of Engine.	Horse Power.	Size of Cylinders.		Size of Drums.		Hoisting Speed Per Minute, Feet.	Weight Hoisted Single Line Rope, Lbs.	Bed Plate.		Estimated Ship. Weight, Lbs.
		Diam. Inches.	Stroke Inches.	Diam. Inches.	Length Inches.			Width Inches.	Length Inches.	
1121	30	8¼	10	34	30	500	3000	82	85	11000
1123	35	8¼	12	42	38	450	3500	91	90	12300
1125	50	10	12	42	38	600	4500	108	91	13000
1126	50	10	12	48	42	650	4000	108	91	13900
1128	65	11	14	48	42	600	5000	119	97	16800
1129	65	11	14	54	42	650	4500	119	97	18000
1130	75	12¼	15	48	42	550	6500	126	103	22500
1131	75	12¼	15	54	42	600	6000	126	103	24800
1134	100	14	18	60	48	500	8500	143	125	31500
1135	110	14	20	60	60	450	9500	158	132	35000
1136	110	14	20	66	60	500	9000	158	132	37000

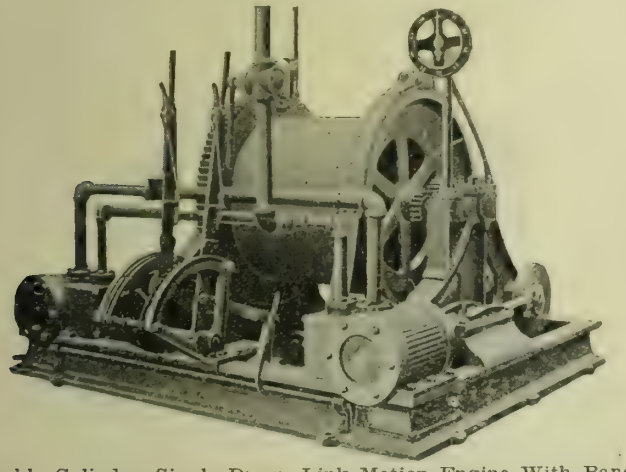


Double Cylinder, Double Tandem Drum and Reversible Link Motion Hoisting Engine, with Powerful Differential Band Brakes. Specially Adapted for Double Shafts, Tail Rope Haulage, Mines and General Hoisting.

The Drums are our Standard Cone Type Friction, grooved for any size rope or smooth as required.

TABLE OF SIZES, ETC.

Size Number of Engine.	Horse Power.	Size of Cylinders.		Dimensions of Drums.		Load Hoisted Single Line on 1 Drum at a time. Lbs.	Bed Plate.		Estimated Ship. Weight, Lbs.
		Diam. Inches.	Stroke Inches.	Diam. Inches.	Length Inches.		Width Inches.	Length Inches.	
205	30	8¼	10	34	30	3000	95	104	12700
207	35	8¼	12	42	38	3500	103	113	16000
209	50	10	12	42	38	4500	106	117	18000
210	50	10	12	48	42	4000	116	117	20000
212	65	11	14	48	42	5000	118	142	24000
213	65	11	14	54	42	4500	118	148	26000
214	75	12¼	15	48	42	6500	127	134	28000
215	75	12¼	15	54	42	6000	127	134	30000
218	100	14	18	60	48	8500	152	183	44000
219	110	14	20	60	60	9500	184	183	48500
220	110	14	20	66	60	9000	184	192	50000

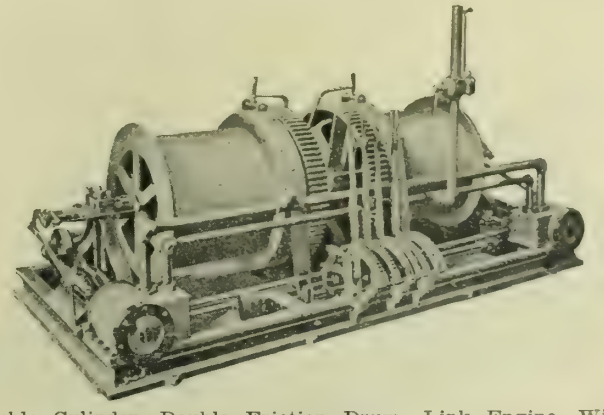


Double Cylinder, Single Drum, Link Motion Engine With Band Brake and Dial Indicator. Especially Adapted for Mines, Incline Planes, Etc.

The drum is keyed fast to the shaft and the hoisting and lowering is done by steam, insuring safety and complete control of all operations. Has one powerful differential brake of wood or asbestos.

TABLE OF SIZES, ETC.

Size Number of Engine.	Horse Power.	Cylinders.		Size of Drums.		Hoisting Speed Per Minute, Feet.	Weight Hoisted Single Line Rope, Lbs.	Bed Plate.		Estimated Ship. Weight, Lbs.
		Diam. Inches.	Stroke Inches.	Diam. Inches.	Length Inches.			Width Inches.	Length Inches.	
137b	30	8¼	10	34	30	500	3000	82	85	9500
139d	35	8¼	12	42	38	450	3500	91	90	10800
141f	50	10	12	42	38	600	4500	108	91	11800
142g	50	10	12	48	42	650	4000	108	91	13000
144i	65	11	14	48	42	600	5000	119	97	15500
145j	65	11	14	54	42	650	4500	119	97	16300
146k	75	12¼	15	48	42	550	6500	126	103	19700
147l	75	12¼	15	54	42	600	6000	126	103	21400
150p	100	14	18	60	48	500	8500	143	128	28000
151q	110	14	20	60	60	450	9500	158	132	31000
152r	110	14	20	66	60	500	9000	158	132	33000



Double Cylinder, Double Friction Drum, Link Engine With Powerful Brakes. Special Adaptation: Double Track Inclines, Double Shafts in Mines and Tail Rope Haulage.

The drums being loose on the shaft, when not in gear, gives them absolute independence of each other in action.

The advantage of this style of engine for Tail Rope Haulage is at once apparent, one drum being thrown into gear winds up the cable while the other, being loose on the shaft, unwinds, and by reversing the engine the opposite winding and unwinding takes place.

TABLE OF SIZES, ETC.

Size Number of Engine.	Horse Power.	Cylinders		Drum		Hoisting Speed Per Minute, Feet.	Weight Hoisted Single Line Rope, Lbs.	Bed Plate.		Estimated Ship. Weight, Lbs.
		Diam. Inches.	Stroke Inches.	Diam. Inches.	Length Inches.			Width Inches.	Length Inches.	
239	30	8¼	10	34	30	500	3000	146	85	14200
241	35	8¼	12	42	38	450	3500	162	90	17000
243	50	10	12	42	38	600	4500	167	91	19000
244	50	10	12	48	42	650	4000	172	91	22000
246	65	11	14	48	42	600	5000	194	97	25000
247	65	11	14	54	42	650	4500	194	97	27000
248	75	12¼	15	48	42	550	6500	199	103	30000
249	75	12¼	15	54	42	600	6000	199	103	32000
252	100	14	18	60	48	500	8500	223	125	48000
253	110	14	20	60	60	450	9500	250	132	50500
254	110	14	20	66	60	500	9000	250	132	52500

Any of these hoists can be built up to a capacity requiring 20 x 24 cylinders. Dial indicators can be supplied where desired.

Lidgerwood Manufacturing Company

96 Liberty Street, New York, N. Y

Branch Offices

Pittsburgh Philadelphia Seattle Chicago

London, England

Hoists for Every Mine Service

Products

We build Steam Mine Hoists of all types up to 1000 H. P. in size, and electric mine hoists in all sizes and types.

We have been building steam mine hoists since 1873, and were the first hoist manufacturer to build electric mine hoists.

The experience we have gained during this time enables us to meet every requirement of mine haulage work. Great advance has been made in late years in the development of motors, and control equipment. We have kept in close touch with the advancement in this line, and furnish mine haulage hoists equipped with motors and control systems best adapted for the conditions under which they are to work. Every mine hoist we supply is carefully designed for the particular work it is to perform.

We have expert mining engineers who study the conditions at the mine, the work that is to be done, and recommend the suitable hoist.

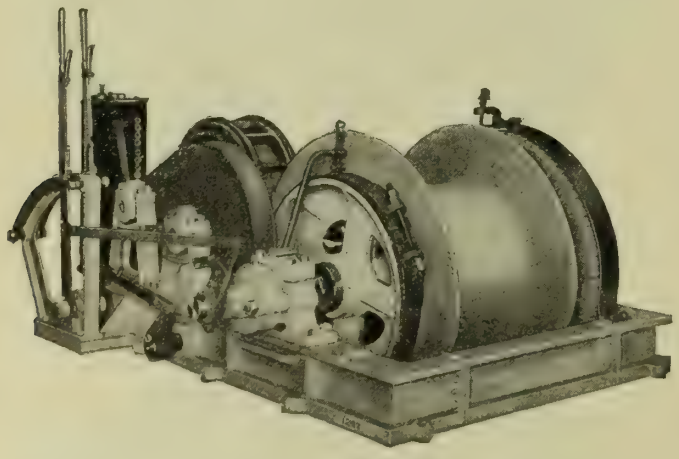


Fig. No. 1247.
New Type Single Friction Drum Hoist especially adapted for supply inclines, inside haulage. When lowering duty is severe we furnish two non-burn lined band brakes.

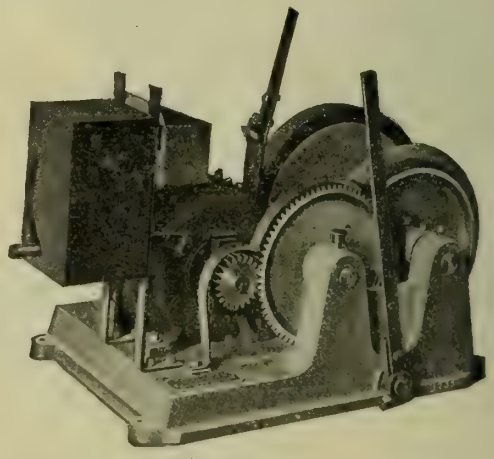


Fig. No. 1235.
Small Mine Hoist built with Direct Current or Alternating Current Motor, coiling 1,000 ft. of ⅜" rope or 800 ft. of ½" rope, adapted for handling cars in rooms, or tipples, supply inclines and various other uses around mines. Carried in stock.

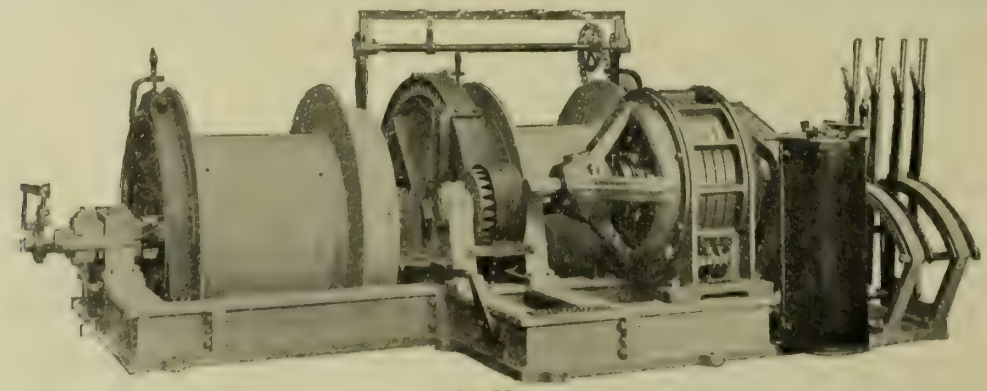


Fig. No. 981.
New Type Double Side by Side Friction Drum Hoist Adapted for Tail Rope Service

ORR & SEMBOWER, INC.

READING, PA.

Hoisting Engines and Boilers

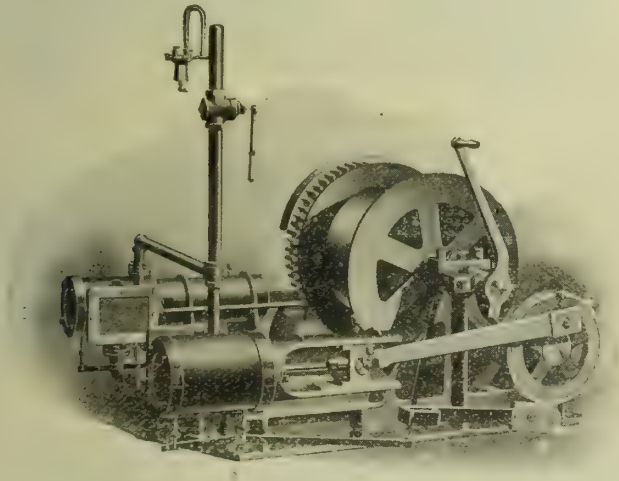
Products

We manufacture a complete line of Steam and Gasoline Hoists, Vertical Tubular Boilers up to 80 H. P., also Horizontal Return Tubular Boilers and Locomotive Type Boilers on Skids and on Wheels.

Double Cylinder, Single Drum, Horizontal Hoisting Engine, Without Boiler. With Large Drums and Sectional Frames.

Cut Gears, owing to perfect contact, will outwear two sets of Cast Gears.

These Engines will be found especially adapted for moving over the mountains or placing within the mines. The frames are made in sections, but securely bolted together, and all parts are well secured by dowel pins. By this means they can be taken apart and packed in a very small space for prospecting purposes, or can be readily lowered down a shaft for service on the levels.

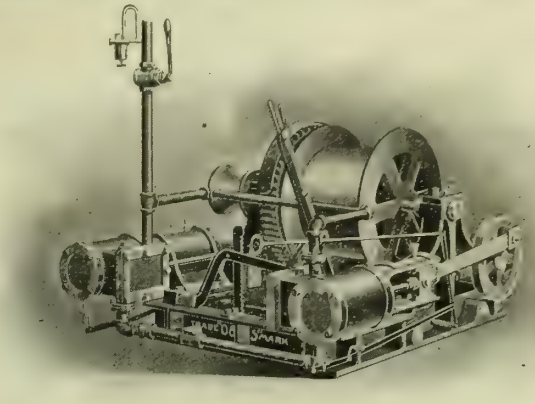


Six Sizes—8, 10, 15, 25, 35 and 45 Horse-power.

DESCRIPTION	ENGINE SIZE					
	No. 132	No. 133½	No. 134	No. 135	No. 136	No. 137
Horse-power	8	10	15	25	35	45
Size of Cylinder, inches	4x6	5x7	6¼x8	7x10	8½x10	9x12
Diameter of Drum, inches	14	16	20	24	28	32
Diameter of Flanges, inches	20½	22	28	37	38	39
Length of Drum, inches	12	14	16	20	26	26
Floor Space required, inches	33½x41	35x48	42x53	51x64	67x72½	67x81½
Weight Hoisted, Single Rope, usual speed, pounds	1000	2000	3000	5000	8000	11000
Approximate Shipping Weight, pounds	1400	2000	2700	4200	6400	7800
Cipher Code Name	Isanel	Israel	Isaac	Ivy	Ivine	Ivis

Winch heads are furnished with the above engines. Drum is bushed with Phosphor Bronze Bushings.

Double Cylinder, Link Motion, Reversible Hoisting Engines, Without Boilers, With Sectional Frames.

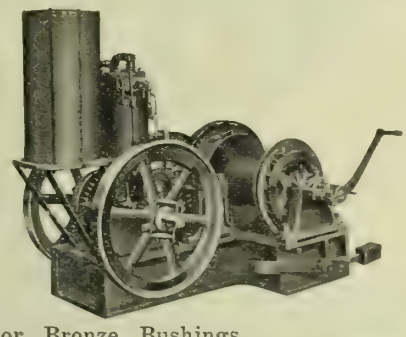


Sizes 8, 10, 15, 25, 35 and 45 Horse-power.

DESCRIPTION	ENGINE SIZE					
	No. 46	No. 47½	No. 48	No. 49	No. 50	No. 51
Horse-power	8	10	15	25	35	45
Size of Cylinder, inches	4x6	5x7	6¼x8	7x10	8½x10	9x12
Diameter of Drum, inches	14	16	20	24	28	32
Diameter of Flanges, inches	20½	28	28	36	37	39
Length of Drum between Flanges, inches	12	12	16	18	26	26
Floor Space required, inches	33½x41	35x48	42x53	51x64	67x72½	67x81½
Weight Hoisted, Single Rope, usual speed, pounds	1000	2000	3000	5000	8000	11000
Approximate Shipping Weight, pounds	1400	2000	2700	4200	6400	7900
Cipher Code Name	Janise	Jane	Jack	Jacob	Jannet	Josie

The "O. & S." Gasoline Hoisting Engine.

This hoist was designed to meet the demand for an outfit suitable for Mining Prospecting, Quarrying and Contractor's work. The engine is a combination of our vertical gasoline engine and friction drum hoist, all mounted on one bed plate. It is equipped with foot brake of sufficient strength to hold any load that the engine will hoist.



Winch head is furnished with this engine. Drum is bushed with Phosphor Bronze Bushings.

Detail description and prices will be furnished on application.

TABLE OF DIMENSIONS

Rated Horse-power	4	6	8	10	12
Size of Cylinder, inches	5½x7½	6¼x7½	6¾x9	7¼x10	8x10
Speed of Engine	350	350	325	300	300
Diameter Drum, inches	8	8	10	11	11
Diameter Drum Flanges	19	19	22	23½	23½
Length Drum, inches	15¼	15¼	16¼	16¾	16¾
Weight will hoist 100 feet per minute, lbs.	700	1000	1400	1800	2200
Floor Space required, inches	62x80	62x80	64x84	68x97	68x97
Shipping Weight, pounds	1975	2100	3400	4500	4700
Code Word	Rettew	Rettig	Rex	Reyle	Rhine

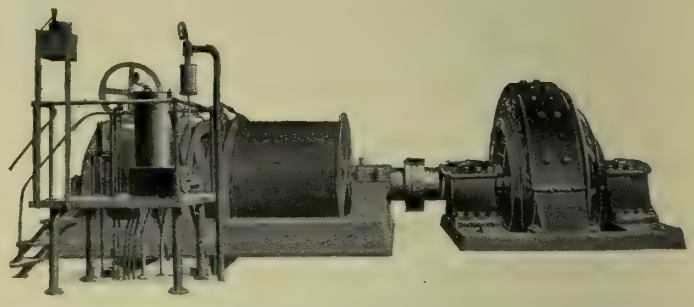
OTTUMWA IRON WORKS

Ottumwa, Ia., U. S. A.

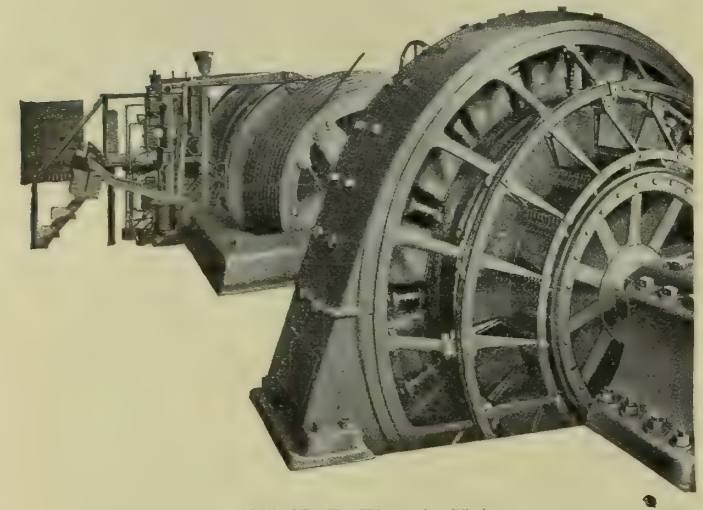
Designers and Manufacturers of

Electric, Steam, and Air Hoists

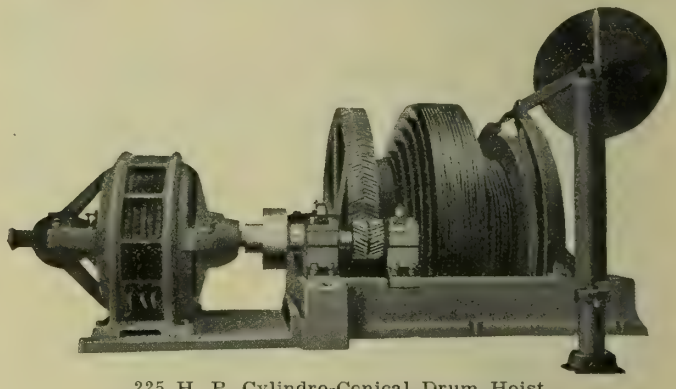
Ottumwa hoists cover a wide range of types and designes and they solve all hoisting problems. "Ottumwa" insures safety, service and higher economy of operation. They are handling the large jobs as well as small. Every Ottumwa hoist is backed by over 40 years of experience in designing and building hoisting machinery. Write for our new catalogue No. 30 which tells more about our line of machinery.



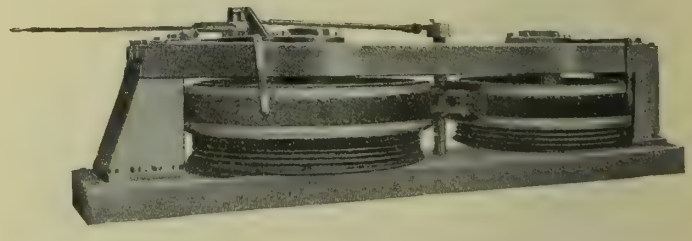
1150 H. P. Electric Hoist.
Rope pull 21800 lbs. Rope speed 2400 ft. per minute.



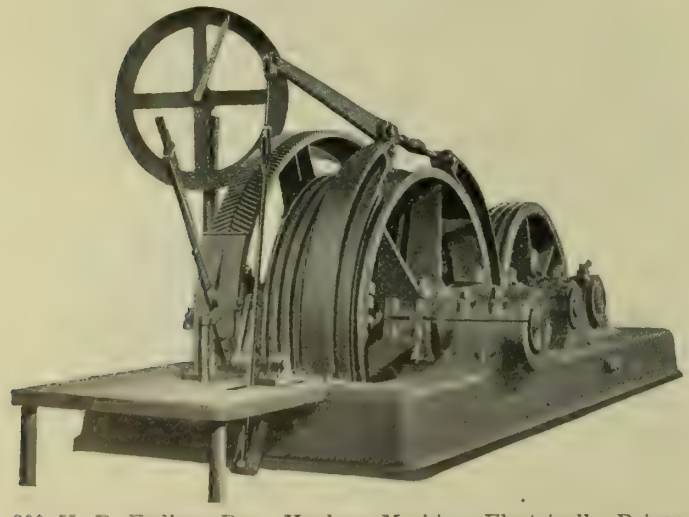
1300 H. P. Electric Hoist.
Largest coal mine hoist in the world. Rope pull 38000 lbs.; rope speed 2000 ft. per minute.



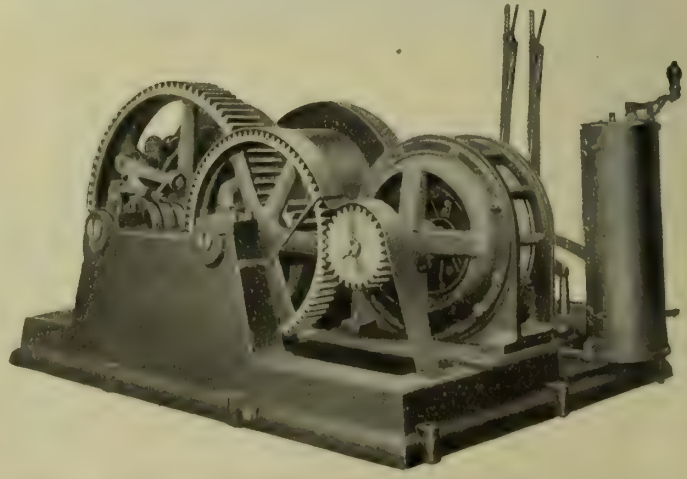
225 H. P. Cylindro-Conical Drum Hoist.



Gravity Plane Machine for Inclines.



200 H. P. Endless Rope Haulage Machine, Electrically Driven.



Small Electric Hoists 5 to 75 H. P.



1200 H. P. Steam Hoist.

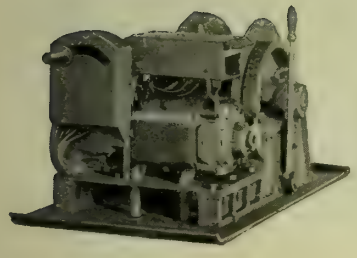
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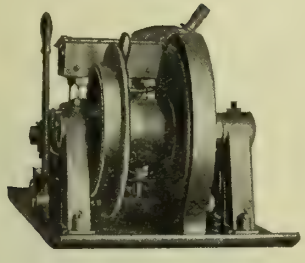
The Pneumelectric Machine Company

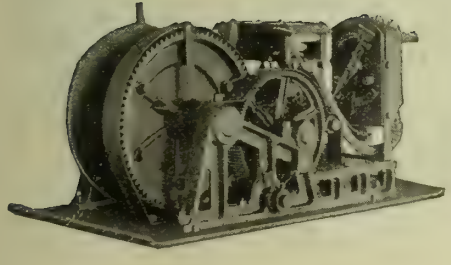
SYRACUSE, N. Y.

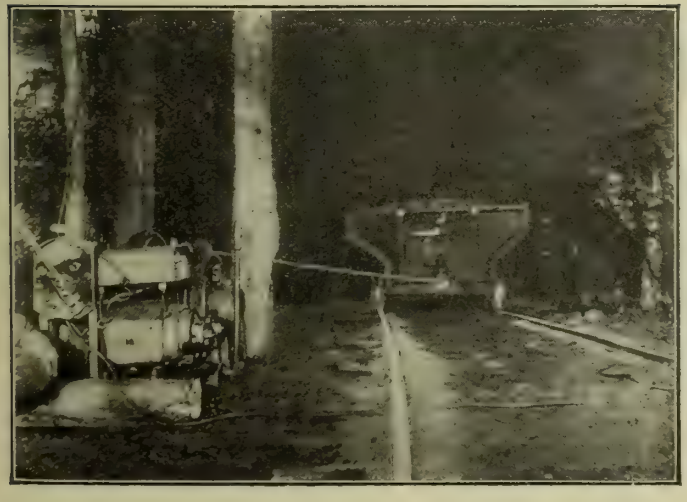
Pneumelectric
TRADE MARK

Electric Room Hoist









A small portable electric Hoist that is built especially for hauling mine cars and hoisting light loads in and about coal mines. It can be furnished standard with one or two drums, and in special cases with three drums, the details being the same in all forms.

Uses

Single Drum Hoist—Hauling mine cars on grades in headings or rooms. Hoisting material anywhere around a mine. Hauling cars to or from dumps or tipples.

Double Drum Hoist—Hauling cars by head and tail rope system for short distances. To do the work of two single drum hoists in special cases.

Triple Drum Hoist—For special cases where there are three different duties to be performed. This hoist is especially valuable in the Anthracite Field.

A very important application of the Single Drum Hoist is for the handling of cars from the working faces in headings. It eliminates delays for the men and for the locomotive and helps to speed up heading advancement. The Miner operates the Hoist and the cars are therefore gathered at practically no expense.

Specifications

Rope Drum—Capacity 800 ft. of $\frac{3}{8}$″ or 500 ft. of $\frac{1}{2}$″ rope.

Motor—Rated hoist capacity, 5 H. P. Can be furnished for any standard voltage, either D. C. or A. C. The D. C. motor is compound wound, thus assuring uniform hauling speed at various loads.

Gearing, etc.—All spur gearing, double reduction cut gears; heavy shafts and bronze bushed bearings; positive clutch; automobile type band brake.

	Width	Length	Height	Weight
Single Drum Hoist	28″	52″	26″	830 lbs.
Double Drum Hoist	44″	52″	26″	1375 lbs.
Tripple Drum Hoist	60″	52″	26″	1920 lbs.

Performance

The Pneumelectric Room Hoist can give a rope pull up to 1800 pounds at a speed of from 200 feet per minute at no load to 100 feet per minute on full load.

South Side Foundry & Machine Works

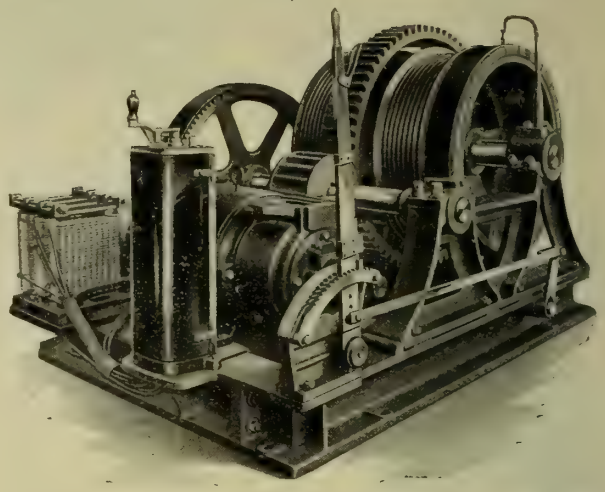
Charleston, West Virginia

Designers and Builders of

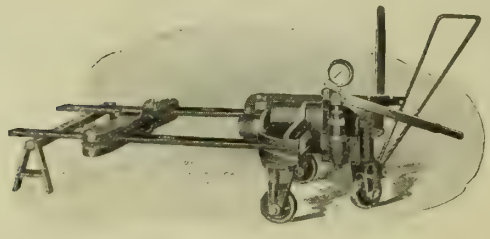
Complete Mining Equipment, Steam and Electric Hoists and Haulages for Coal Mines.

Products.

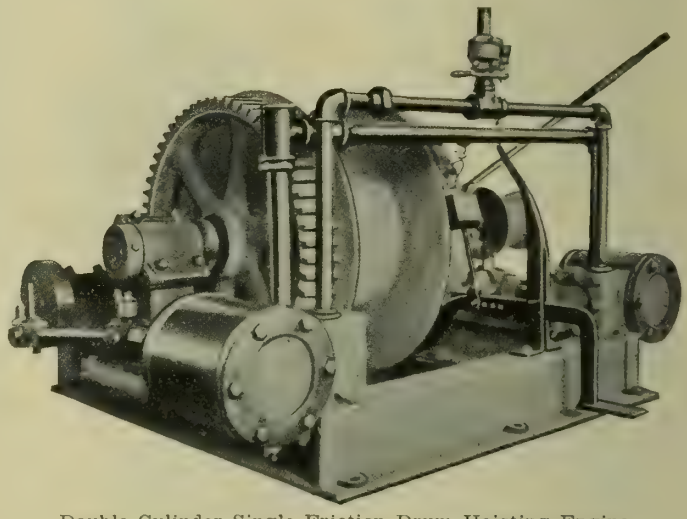
Incline Drums and Monitors; Sheave Wheels; End and Cross-over Tipple Dumps; Improved Shaker Screen Outfits; Boom Loaders and Picking Tables; Mine Ventilating Fans, steam and electric driven, from 3 feet to 10 feet in diameter; Portable Hydraulic Wheel Presses; Cages, plain and self-dumping, for Shaft Mines; Patent Ratchet Rail Benders; Miners' Ratchets and Drills. Large stock Wire Rope, Boiler Tubes, Pipe and Fittings, Vertical Boilers and Hosting Engines. Iron and Brass Castings. Mine Cars, any style or type.



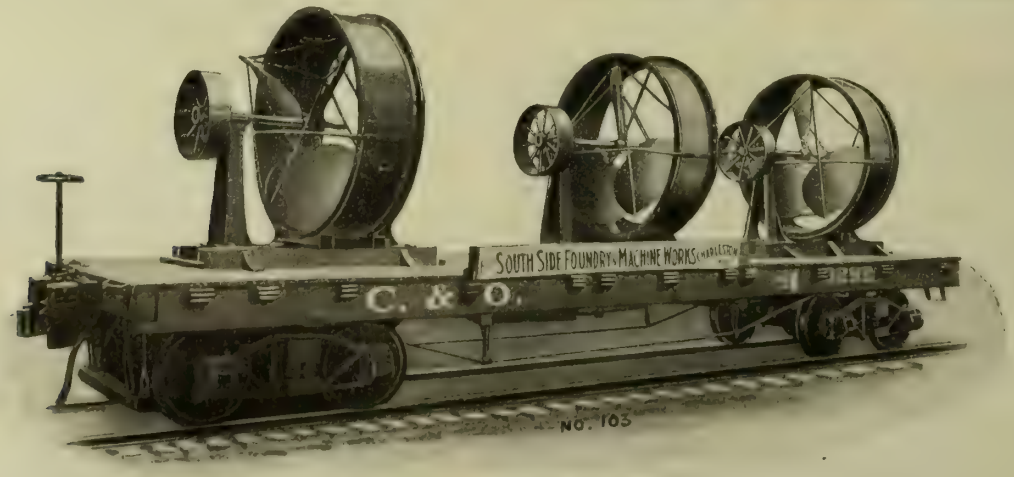
Electric Hoisting Machine for Hoisting Cages in Shaft Mine.



Portable Hydraulic Wheel Press.
For Use of Logging Contractors, Coal Mining Companies, Etc.



Double Cylinder Single Friction Drum Hoisting Engine.



Carload Shipment of 8-Foot Electric Mine Fans.

VULCAN IRON WORKS

WILKES-BARRE, PA

NEW YORK CHICAGO

VULCAN HOISTS

Products

Hoists—Electric in Single or Double Drum; Hoists—Steam, first motion, geared or breaker driving; Engines—Steam; Locomotves—Steam, all various types and sizes used in mine work; Locomotives—Gasoline six to twelve tons; Cages—All the various types in general use, and special types to order; Ventilating Fans—All types and sizes and for all standard mercury—column measurements; Coal Crushers, Plungers—Jig and other types.



Electric Hoist Built for the Woodward Iron Co., Woodward, Ala.

Vulcan Hoists

Since 1849 we have been building mine hoisting machinery.

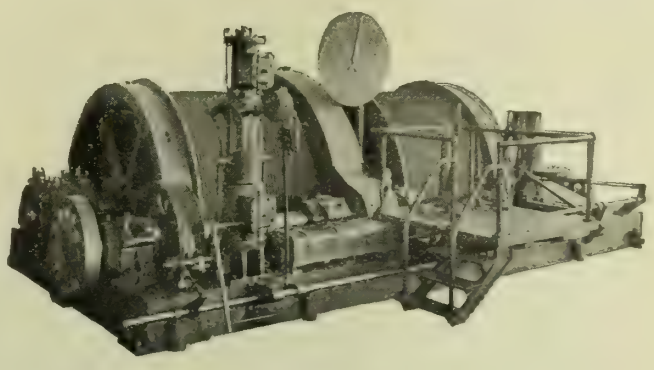
Situated as we are, in the heart of the anthracite region, our engineers have every opportunity to study conditions as they actually exist.

There is no hoist problem too large or too small for us to handle.

Our engineering experience naturally covers all types of mine hoisting apparatus, steam, compressed air or electric.

We are designers and builders of the largest electric hoisting machinery that is operating today.

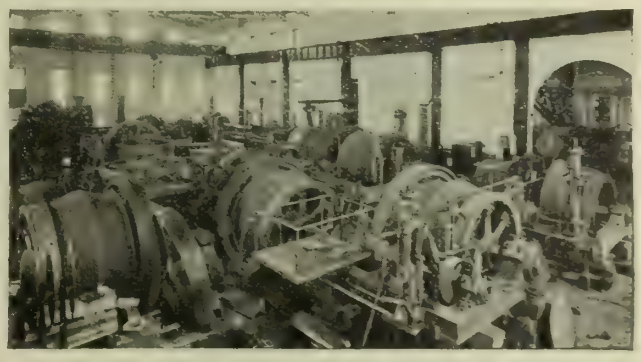
Our engineers will study your conditions, suggest the type of hoist you need, design it, and build it for you—or they will bid on the work specified by your engineer.



750 H. P. Hoist Built for Lehigh Coal & Navigation Co.

What You Should Look for in a Hoist

First, you want capacity to haul your load at the most economical speed. Then you want sufficient overload capacity to enable you to haul at higher than general speeds, or heavier loads at the usual speed. The gear ratios must be such as to reduce current consumption to the lowest figure. The proportions of the hoist must be such as to withstand the severe grind of continued operation at full load. Parts should not wear quickly, nor should bearings run hot; and the manufacturer must be reputable, must be one that you KNOW can build hoists and stay in business. You want EFFICIENCY! You get all this when you specify VULCAN HOISTS.



A Part of the Vulcan Hoist Shop.

The Wellman-Seaver-Morgan Company

Cleveland, Ohio U. S. A.

New York Office: 50 Church St

Denver Office: 612 Ideal Bldg.

Steam and Electric Hoists and Hauling Engines

W-S-M hoists are built in all sizes for every kind and variety of service. The complete equipment of our two large factories, including steel foundry, iron foundry, forge and extensive machine shops, enables us to handle work of the heaviest character.

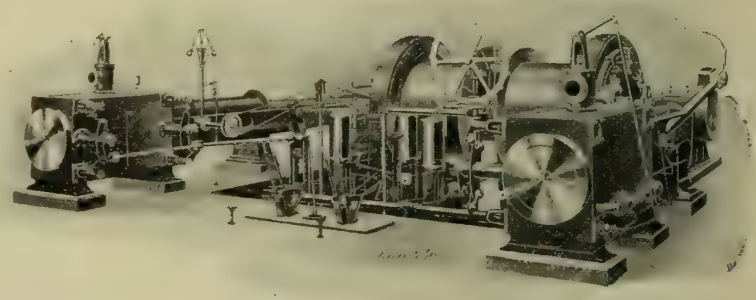
Strength and efficiency are the first considerations in designing W-S-M steam or electric hoists.

A long list of satisfied customers is our best advertisement, to whom we gladly refer prospective customers.

The fact that we have been building hoists of all kinds for thirty years signifies much—but that we have applied the experience so gained intelligently means much more.

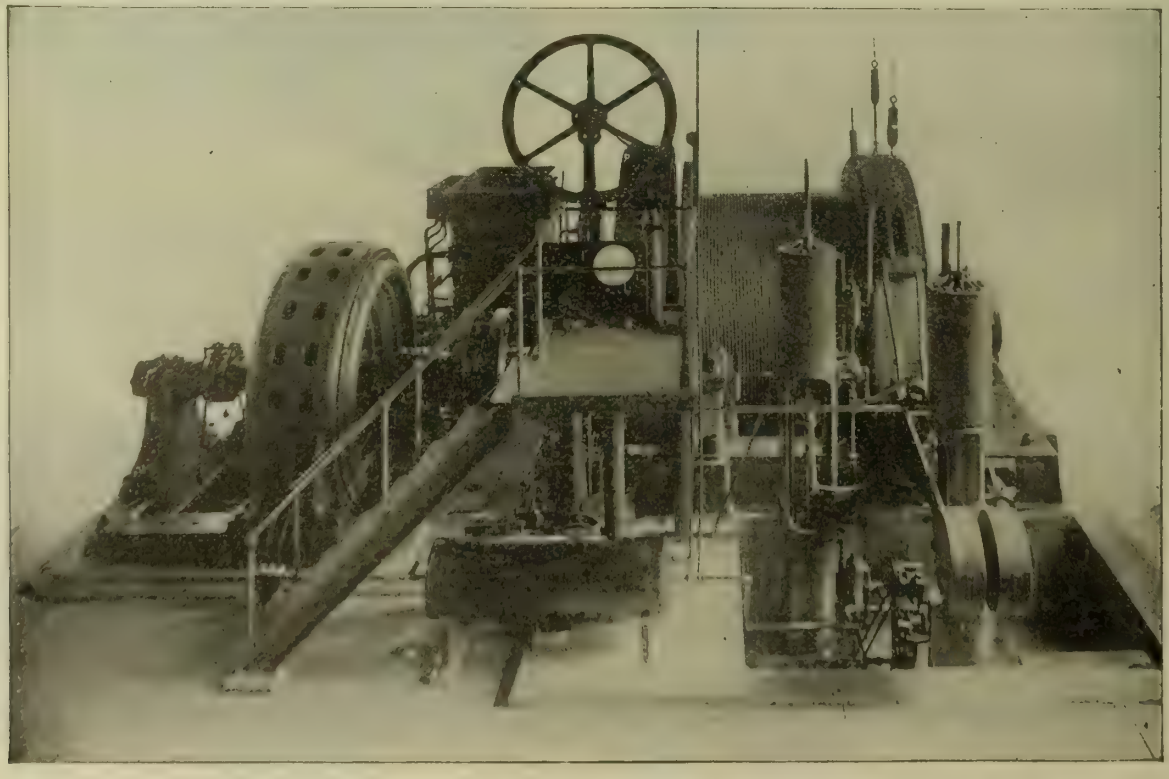
Our experience has been applied in forestalling the hoisting needs of mines—in making our hoists not only more simple, but more safe and durable.

Our electric hoists are equipped with machined herring-bone gears encased in oil tight housings, steel drums, weighted steel safety brakes and powerful steel clutches; also the completest possible safety equipment to prevent over-speed or over-winding.



First Motion Corliss Hauling Engines at Mines of Oak Hills Coal Company, Oak Hills, Colo.

Send for catalogues of our specialties as follows:
Steam and Electric Mine Hoists.
Endless Rope Haulage Plants.
Mine Cages, Skips and Ore Cars.
Rotary Car Tipples.
Hulett Coal-Handling Bridges and Buckets.
Coal Pier Machinery.
Car Dumpers for Coal Shipment.
Coke Pushers, Coal Leveling, Quenching and Loading.
Machines for Coke Ovens.
Hughes Gas Producers.
Hydraulic Turbines.



8′ Single Drum Electric Slope Hoist with 700 H. P. Motor at Mines of Keystone Coal & Coke Co., Greensburg, Pa. A duplicate of this hoist at the Canadian Collieries (Dunsmuir) Ltd., Victoria, B. C.

THE FALK COMPANY

Milwaukee, Wisconsin

Manufacturers of

Wuest Herringbone Gears For All Classes Of Mine Equipment.

AGENTS AND BRANCH OFFICES:

Pittsburgh, W. O. Beyer, 1024 Park Bldg., Pittsburgh, Pa.
New York and New England, M. P. Fillingham, 50 Church St., New York City.
West Coast, F. W. Grinwood, Rialto Bldg., San Francisco, Cal.
Pennsylvania Coal Fields, Vulcan Iron Works, Wilkes Barre, Pa.
Colorado District, Denver Engineering Works Co.. Denver, Colo.

The use of Wuest Gears in connection with mine hoists, pumps, tube mills and other mining plant has led to a great simplification in design combined with reduced power consumption and complete absence of shock and vibration with elimination of noise.

These remarkable gears are hobbed from solid blanks on special machines designed and built for this purpose.

Practically all gear problems in connection with mining plant can be met with a single gear and pinion where double and triple trains were formerly used.

Wuest Gears with a reduction ratio of 20 to 1 are not uncommon.

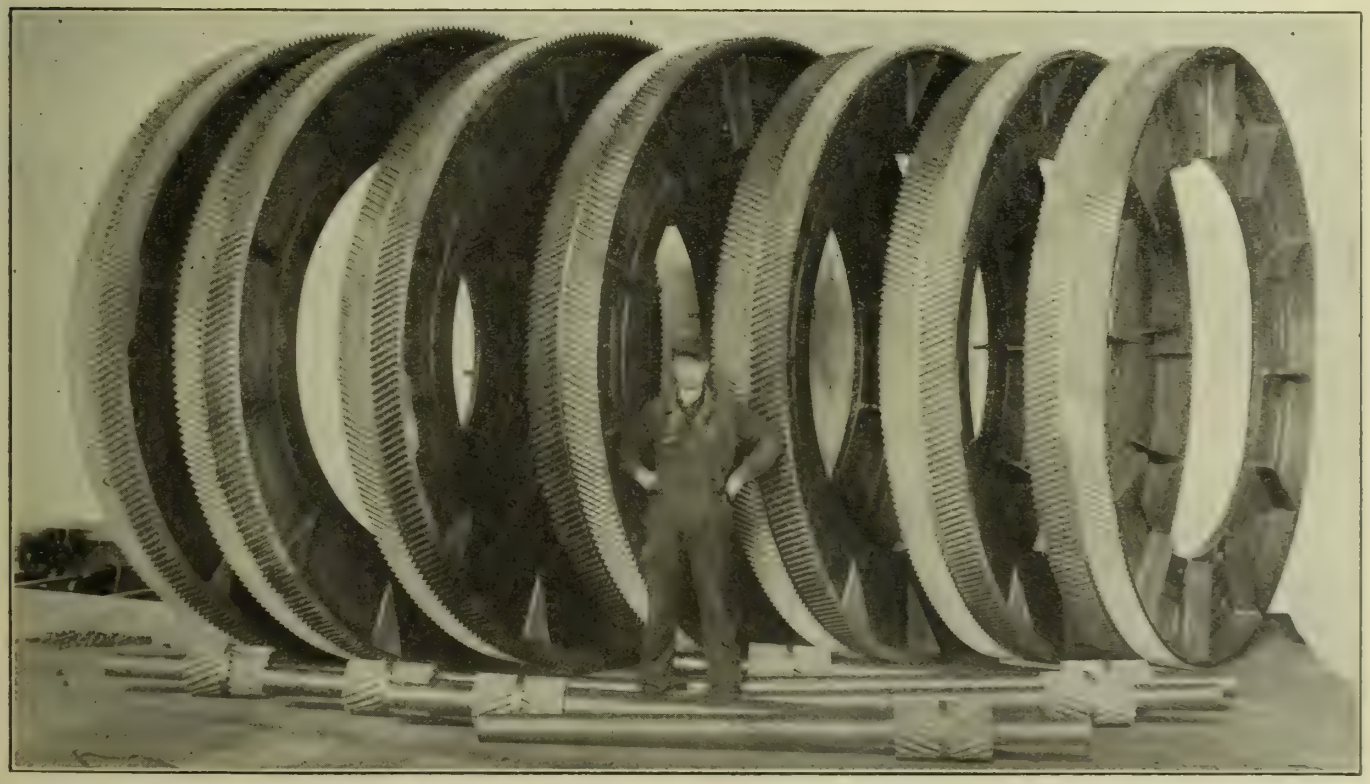
For the electrification of mine hoists and pumps these gears are indispensable.

The illustration shows a group of high ratio Wuest gears for 300 H. P. ball mills. The cast steel gears are made in ring form for mounting direct on the mills. The pinions are forged solid with their shafts and the shafts are coupled to the motors.

The smooth running qualities of Wuest gears have led to their adoption on steam and air driven hoists where high ratios of reduction are not needed.

We manufacture special fly wheel gears for large air compressors driven from high speed motors.

Full particulars for any kind of drive may be obtained by application to The Falk Company.



GENERAL ELECTRIC COMPANY

General Office: Schenectady, N. Y. The Guarantee on Goods of Excellence Electrical Sales Offices In All Large Cities

Electrical Equipment for Mines

G-E motor driven hoists have been installed in large numbers during the past year (1914-15). Many of these hoists were furnished on repeat orders from satisfied users.

APPROXIMATE LIST OF ELECTRIC COAL MINE HOIST INDUCTION MOTORS 250 H.P. AND ABOVE

Name of Company and Location of Mine	Inclination to Horizontal	Maximum Depth in Feet	Hourly Tonnage (2000 Lb.)	Material per Trip in Lb.	Wt. of Skip or Cars and Cage	Rope Speed in Ft. per Min.	Drum Diameter in Ft.	Hoist Motor Rating in H.P.	Hoist Motor Speed in R.P.M.	Hoist Motor Voltage	Hoist Motor Prequency	Type of Contro.
* Consolidation Coal Co., Acosta, Pa	90°	440		3,500	10,100	1225	6½-8½	250	450	2300	60	Contactor
* Davis Coal & Coke Co., Cumberland, Md	2¾° 3½°	7000		52,300	27,000	750	5	270	600	550	60	Contactor
* Pennsylvania Coal Co., Dunmore, Pa.	3½° 9°	2775	158	71,000	33,000	500	6	300	450	440	60	Contactor
* Pennsylvania Coal Co., Dunmore, Pa	3½°-9°	3535	125	71,000	33,000	500	6	300	450	440	60	Contactor
* Pennsylvania Coal Co., Dunmore, Pa.	5° 11°	4930	112	71,000	33,000	500	6	300	450	440	60	Contactor
* Pittsburg Coal Co., Pittsburg, Pa. (3 equipments)	90°	220	480	8,000	12,000	800	7½-9	300	300	2300	60	Contactor
* Greensburg Coal & Coke Co., Greensburg, Pa	90°	190	353	4,300	13,630	1140	6½-8	300	450	2300	60	Contactor
* J. K. Dering Coal Co., Clinton, Ind	90°	274	300	3,400	6,200	1370	5	300	514	2200	60	Contactor
Consolidation Coal Co., Jenner, Pa								300	450	2200	60	Liquid rheostat
Victor American Fuel Co., Trinidad, Colo	Slope	2600		70,000	36,000	600	(2)6'-(1)3'	300	600	440	60	Contactor
* Central Coal Co., Kimberly, Ala		575				800		300	600	220	60	Contactor
Victor American Fuel Co., Gallup, N. M.	Slope	3600		76,000	36,000	600	6	300	600	440	60	Contactor
Victor American Fuel Co., Hastings, Colo	Slope	5000		70,000	36,000	600	6	375	600	440	60	Contactor
Victor American Fuel Co., Gallup, N. M.	Slope	3000		70,000	36,000	600	5½	375	600	440	60	Contactor
* New River Co., McDonald, W. Va.	90°	453	252	4,200	6,700	1680	6–9	400	600	2300	60	Contactor
* New River Co., McDonald, W. Va.	90°	467	216	3,600	6,000	2000	6–9	400	600	2300	60	Contactor
* New River Co., McDonald, W. Va	90°	483	180	3,000	6,100	1780	6–9	400	600	2300	60	Contactor
* New River Co., McDonald, W. Va	90°	422	198	3,300	6,600	1780	6–9	400	600	2300	60	Contactor
* Henderson Coal Co., Gwendolen, Pa.	90°	360		5,200	10,300	1740	7–9	400	514	440	60	Contactor
* Vandalia Coal Co., West Terre Haute, Ind	90°	280	540	6,000	7,000	1560	6	500	450	2200	60	Contactor
* Kemmerer Coal Co., Sublet, Wyo.	18°	4000	150	50,000	25,000	1200		300	450	2200	60	Contactor
* Victor American Fuel Co., Gallup, N. M	Slope	6000		95,000	45,000	600	8	600 { 300 300 }	600	440	60	Contactor
* D., L. & W. Coal Co., Nanticoke, Pa.	4½°-30°	4000	200	40,000	15,000	1200	8	600	400	440	60	Liquid rheostat
* Keystone Coal & Coke Co., Greensburg, Pa	2½° 3½°	8750	300	240,000	100,000	1000		700	300	2200	60	Liquid rheostat
* Lehigh Coal & Navigation Co., Lansford, Pa.	90°	900	80	11,500	16,500			750	300	2200	25	Liquid rheostat
D., L. & W. Coal Co., Hampton, Pa.	90°	550	1020	34,000	17,000	740	10–16	800	225	2200	60	Squirrel cage motor

Equipments marked (*) have been purchased since January, 1912.

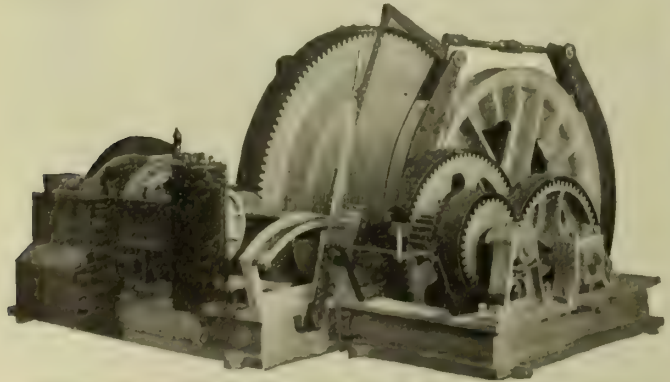
APPROXIMATE LIST OF ELECTRIC COAL MINE HOIST D-C. MOTORS 200 H.P. AND ABOVE

Name of Company and Location of Mine	Inclination to Horizontal	Maximum Depth in Feet	Hourly Tonnage (2000 Lb.)	Material per Trip in Lb.	Wt. of Skip or Cars and Cage	Rope Speed in Ft.	Rope Diam. in In.	Hoist Motor Rating in H.P.	Hoist Motor Speed in R.P.M	MOTOR-GENERATOR SET				
										Motor			Generator	Flywheel
										Voltage	Rating in H.P.	Speed in R.P.M.	Voltage	Weight in Lb.
* Colorado Fuel & Iron Co., Florence, Colo.	90°							250	90	440	125	900	260	6,500
* Cambria Coal Co., Royalton, Ill.	90°	280	437	7,000	10,000	910	1¼	250	600	2200	200	900	250	6,000
Osage Coal Mining Co., McAlester, Okla.	90°	720	250	8,350	5,500	1140	1¼	350 { 175 175 }	350					
* New River & Pocohontas Consol. Coal Co., Herberton, W. Va.	90°	420	225	3,000	8,000	2200 max.	1¼	380	88	2200	850 kv-a.	720	275	(Syn. motor)
* Christopher Coal Co., Christopher, Ill.	90°	687	643	9,000	11,000	2100	1⅜	1150	109	2300	650	600 510	550	22,600
* Peabody Coal Co., Nokomis, Ill.	90°	687	874	16,000	19,000	1950 max.	1½	1300	57	2300	950	514 435	550	33,000

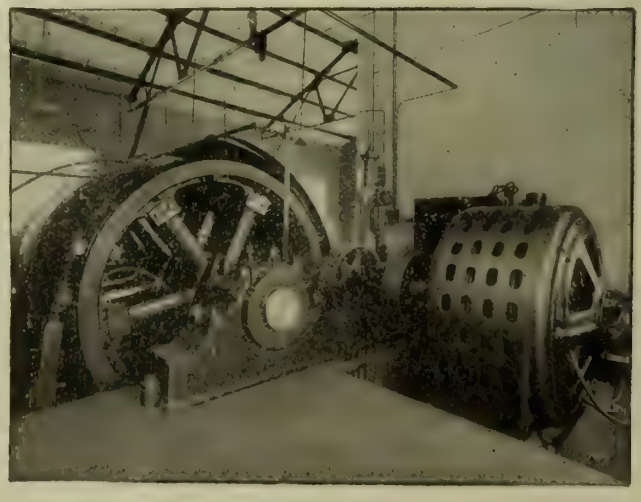
Equipments marked (*) have been purchased since January, 1912.

With G-E motor driven hoists a more flexible and safer control can be obtained than is possible with steam hoists. Where state law requires a protective device the hoist operator is often responsible for the setting of such device. He must leave his platform to put it in operation. The protective equipment of G-E motor driven hoists is so arranged that passengers can assure themselves that the condition of the setting is safe before entering the cage. If the protective device is in action, the hoist cannot carry men above the collar. Accidents due to hoisting men into the horns are thus rendered impossible.

Mine hoists driven by G-E motors are operated at low costs because, first, boilers are eliminated, saving cost of their attendance; second, vibration on rope is decreased—increasing its life and that of the head gear, etc., finally, because no power is used during idle moments though ample power is always available when needed.



75 H. P. 600 R. P. M. 440 Volt G-E Motor Driven Hoist.



750 H. P. Hoist No. 5 Shaft Lehigh Coal & Navigation Co.

WESTINGHOUSE ELECTRIC & M'F'G CO.

EAST PITTSBURGH, PA.

SALES OFFICES

Atlanta, Ga.	Butte, Mont.	Columbus, Ohio.	*Houston, Tex.	Memphis, Tenn.	Philadelphia, Pa.	San Francisco, Cal.
Baltimore, Md.	Charleston, W. Va.	Dallas, Tex.	Indianapolis, Ind.	Milwaukee, Wis.	Pittsburgh, Pa.	Seattle, Wash.
Birmingham, Ala.	Charlotte, N. C.	Dayton, Ohio.	Joplin, Mo.	Minneapolis, Minn.	Portland, Ore.	Syracuse, N. Y.
Bluefield, W. Va	Chicago, Ill.	Denver, Colo.	Kansas City, Mo.	New Orleans, La.	Rochester, N. Y.	Toledo, Ohio.
Boston, Mass.	Cincinnati, Ohio.	Detroit, Mich.	Louisville, Ky.	New York, N. Y.	St. Louis, Mo.	Washington, D. C
Buffalo, N. Y.	Cleveland, Ohio.	*El Paso, Tex.	Los Angeles, Cal.	Omaha, Neb.	Salt Lake City, Utah.	

*W. E. & M. Co., of Texas.

Westinghouse Induction Motors for Hoisting and Similar Service

Products

Electrical Equipments for all mining apparatus.

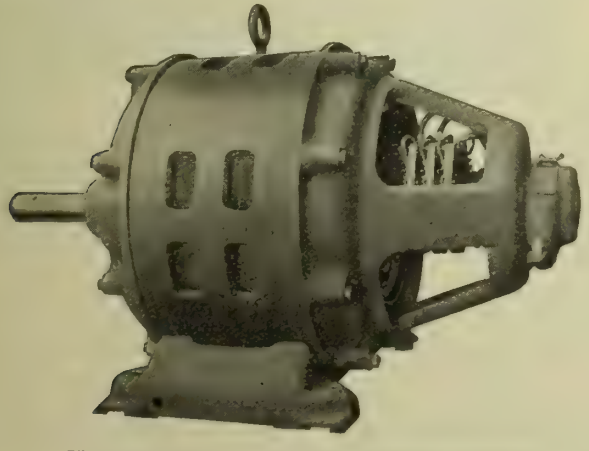
Type CI With Wound Secondaries

These motors have strong starting torque for starting heavy loads, especially in reversing service. The rotors are small in diameter permitting ready braking and quick reversal.

In general the mechanical construction is similar to our squirrel cage induction motors type CS, except for the rotor winding ,embodying the latest methods of construction, such as pressed or rolled steel instead of cast iron, etc. Form wound coils are used throughout, making possible quick repairs in case of accident. The bearings are very liberal and the air gap is large, giving unusually long life.



200 H. P. Type C. I. Motor, Showing Massive Frame Construction.



75 H. P. Type C. I. Motor, Showing Rolled Steel Frame Construction.

These motors are built for 60 cycle circuits, two or three phase, 220 and 440 volts, and 3 phase 550 volts. Motors for 2200 volts 3 phase can be supplied in most sizes.

RATINGS

H. P.	APPROXIMATE FULL LOAD SPEEDS.			
75	900	720	600	
100		720	600	
150		720	600	
200			600	514
250			600	514
300			600	514

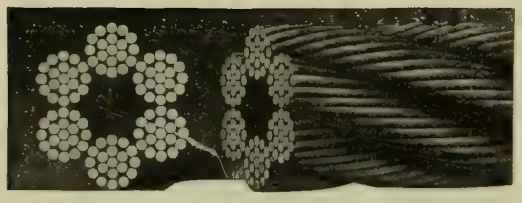
AMERICAN STEEL & WIRE CO.

Sales Offices:

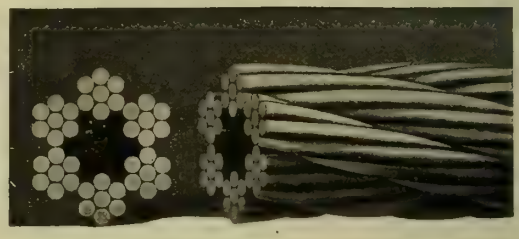
CHICAGO	208 So. La Salle Street	CLEVELAND	Western Reserve Building
NEW YORK	30 Church Street	BALTIMORE	32 So. Charles Street
WORCESTER	94 Grove Street	WILKESBARRE, PA.	Miners Bank Building
BOSTON	120 Franklin Street	ST. LOUIS	3d National Bank Building
PHILADELPHIA	Pennsylvania Building	ST. PAUL-MINNEAPOLIS	Pioneer Bldg., St. Paul
PITTSBURGH	Frick Building	OKLAHOMA CITY	State National Bank Building
BUFFALO	337 Washington Street	BIRMINGHAM, ALA.	Brown-Marx Building
DETROIT	Foot of First Street	DENVER	1st National Bank Building
CINCINNATI	Union Trust Building	SALT LAKE CITY	Walker Bank Building

Export Representative: U. S. Steel Products Co., New York
Pacific Coast Representative: U S. Steel Products Company
San Francisco Los Angeles Portland Seattle

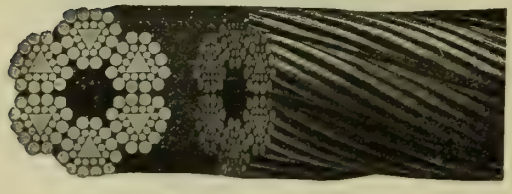
AMERICAN WIRE ROPE



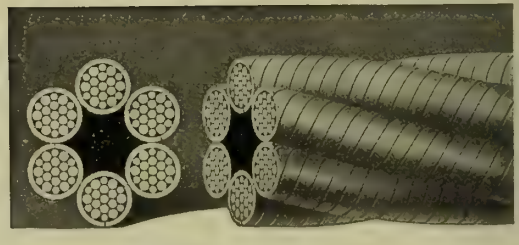
STANDARD HOISTING ROPE.
6 Strands, 19 Wires, 1 Hemp Core.



HAULAGE ROPE.
6 Strands, 7 Wires, 1 Hemp Core.



FLATTENED STRAND ROPE.
6 Strands, 25 Wires, 1 Hemp Core.



STEEL CLAD ROPE.
Note Exterior Serving of Flat Steel.

For Mine Hoists

In mine shaft the Standard Hoisting Rope shown above is almost universally used. Crucible and Extra Strong Crucible grades are most popular, but Plow Steel is sometimes employed, especially where the load is heavy. Standard Hoisting Rope in high strength Monitor grades are used (in ½ and ⅝ inches in diameter) in connection with coal cutting machines, also as main hoisting rope on steam shovels where the stripping process of mining is employed.

For Haulage and Tail End Purposes

The Haulage Rope is best suited. We make these ropes in many different constructions and of several grades of wire depending upon conditions at the mine.

For Steam Shovels

The Flattened Strand and Steel Clad Ropes are generally being particularly well adapted to the heavy strains and abrasion encountered in this class of work.

Stocks

Carried with jobbers and dealers in all mining communities also in our own warehouses at Chicago, New York, Pittsburgh, Buffalo, Cleveland and St. Louis.

HAZARD MANUFACTURING CO.

WILKES BARRE, PA.

HOISTING AND HAULAGE ROPES

HAZARD WIRE ROPE

INSULATED WIRES & CABLES FOR EVERY MINE USE

MADE FOR USERS WHO WANT THE BEST

NEW YORK
533 Canal Street

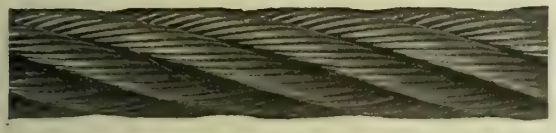
PITTSBURGH
1st Nat'l Bank Building

CHICAGO
552 W. Adams Street

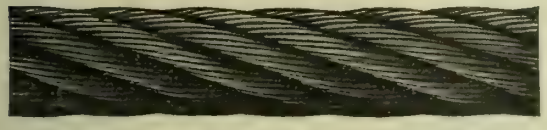
Products

Wire Rope and Insulated Wires and Cables.

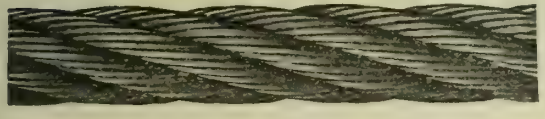
The following sections show the various ropes applicable to mine use



HAZARD Standard Hoisting Rope.



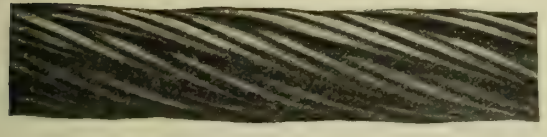
HAZARD Flexible Hoisting Rope.



HAZARD Cable Construction Rope. (Seal Patent)



HAZARD Haulage Rope, Regular Lay.



HAZARD Haulage Rope, Lang Lay.

HAZARD Swedes Iron Wire Rope

Is made from the Best Swedish Iron, imported by us in the form of rods, drawn and finished into Wire in our own Wire Mill. It is made according to standards of material and construction that are uncheapened under competition, and gives the best value, because the best is the cheapest.

HAZARD Cast Steel Wire Rope

Is made from the best steel obtainable in the markets of the world for Wire Rope use. It is unexcelled because it contains the best material and is constructed by methods embodying the best skill and workmanship which have been developed in this country. The HAZARD MANUFACTURING COMPANY has never cheapened or lowered its standards of material or construction.

HAZARD Plough Steel Wire Rope

Is made from the best Plough Steel that is to be obtained in the markets of the world. It stands for absolute fidelity to the best standards of construction and material. It gives the best results under listed conditions of load, diameter of drums and sheaves that can be secured at the price charged.

HAZARD "Olympic Brand" Wire Rope.

Represents the latest and best development in the adaptation of steel to Wire Rope use. It is made with breaking strains 15 to 20 per cent above the strains given in our regular Plough Steel Wire Rope lists. The Wire is specially treated in our Tempering Mill and Wire Mill for the greatest obtainable strength.



Insulated Wires and Cables

Rubber Covered Wires and Cables for Light, Power, Telephone, Telegraph, Railroad Signal, Mining Machines and Electric Locomotives. Bare Copper, Weatherproof and Magnet Wire.

Mining Machine and Locomotive Reel Cables

HAZARD Mining Machine Cables are made in both Twin flat form and Concentric (round) construction.

The outside finish is usually two or three weatherproof saturated braids.

Locomotive Reel Cables can be furnished with any degree of flexibility desired, and in any size.

HAZARD Hard Service outside braids can be furnished where desired at slightly higher prices. This special finish gives greatly increased service, as the hard and tough cover is not easily injured.

Mining Machine and Locomotive Reel Cables with HAZARD Hard Service Braids are particularly adapted for use where the working conditions are unusually severe.

A. LESCHEN & SONS ROPE CO.

SAINT LOUIS, MO.

MANUFACTURERS OF

High Grade Wire Rope for All Purposes

Aerial Wire Rope Tramways

BRANCHES :

New York, Chicago, Denver, Salt Lake City, San Francisco.

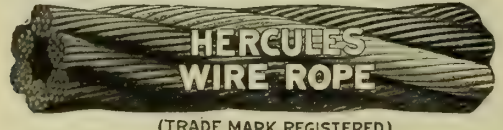
Products.

Wire Rope for all general and special uses including Patent Flattened Strand Mine Hoisting and Haulage Ropes, Red Strand **Hercules Rope**, Non-twisting and Non-spinning Ropes, Dragon Brand Conveyor Cable, Locked Coil Rope, Wire Rope Fittings of all kinds, Aerial Wire Rope Tramways.

LESCHEN QUALITY.

Leschen wire ropes are made in the following grades:—**Hercules,** Cast Steel, Special Steel, Plough Steel, Iron, and galvanized. Of whatever grade, the quality is of the very highest. This is due to the unusual care used in selecting material, and the methods of construction which have been developed during 58 years of experience. We have also given careful study to the various conditions under which wire rope must work, and by correctly combining construction and material, have produced a maximum service wire rope for every condition.

HERCULES Wire Rope.



(TRADE MARK REGISTERED)

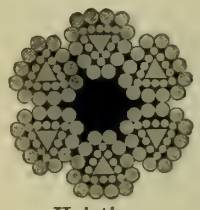
Made with One Red Strand.

This grade of rope is made to withstand severe work of all kinds. It combines strength, toughness, elasticity and flexibility in correct proportions for maximum wire rope service. Every wire that goes into a **Hercules** rope has been carefully and rigidly tested and proven up to the **Hercules** standard. It is made according to our exclusive methods, by only skilled workmen.

Hercules rope is furnished in both Round Strand and Patent Flattened Strand Constructions.

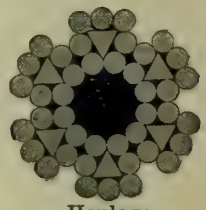
Patent Flattened Strand Construction.

Rope of the Patent Flattened Construction is particularly suitable for mine hoisting and haulage. It is so made that the outer wires conform to a circle, so instead of only the crown wire in each strand being exposed to frictional wear, there are from two to six depending upon the style of construction. In addition to the extra wearing surface, it is stronger, size for size, than a round strand rope, and is equally as flexible. For reasons simple and practical it operates with economy where no other construction of wire rope can work successfully.



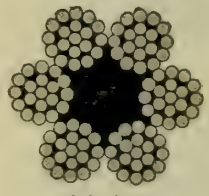
Hoisting

Patent Flattened Strand Wire Rope



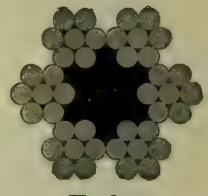
Haulage

Round Strand Construction.



Hoisting

Round Strand Wire Rope



Haulage

Round Strand Wire Rope is composed of a number of wires twisted into a round strand, which are then laid around a hemp center. These strands usually consist of 6, which are in turn composed of 7, 9, 12, 19 or 37 wires each. Other combinations of wires and strands are made for special conditions.

Round strand ropes are furnished for both hoisting and hauling.

Non-twisting and Non-spinning Wire Rope.

This style of rope is so made that it is free from all tendencies to twist or spin when used for shaft sinking or for hoisting where the load or cage is free to revolve. It is made in different grades of material.

Dragon Brand Conveyor Cable

Is of the Patent Flattened Strand type with the wires in every other strand being laid in opposite directions, which makes it non-twisting. The Keystone shape of the strands prevents them from straightening out, which is the chief cause of stretching. It is especially suitable for conveyor cables on coal handling machinery.

MACOMBER & WHYTE ROPE CO.

Manufacturers of Wire Rope of Every Description

CHICAGO, ILL.

BRANCH OFFICES

New York, Portland, Pittsburgh.

Works: Kenosha, Wis.

Sole Makers

PATENT "KILINDO" NON-ROTATING WIRE ROPE
"MACWHYTE" WIRE ROPE
MONARCH WHYTE STRAND WIRE ROPE

TRADE MARK REGISTERED.

TRADE MARK REGISTERED.

Products.

Wire Rope, Sockets, Hooks, Thimbles, Wire Rope Clips, Turnbuckles, Sheaves, Blocks, Mine Car Hitchings, Manila Rope, Tramways.

Monarch "Whyte" Strand Wire Rope.

This is the highest grade rope manufactured. It is made from wire having a tensile strength of 125 tons to the square inch. It is uniform and dependable. The wire before entering the rope is subjected to stringent tests and unless our high standards have been complied with, the wire is rejected. In the manufacture of this rope great care is exercised. The lay of the wires in the strands as well as the strands themselves are perfectly proportioned so as to give each wire an equal portion of the working load. The core is number one hard laid Manila rope, which prevents the rope from pulling in and distorting its lays when subjected to severe strains. This rope is made in various constructions to suit working conditions. It is an absolutely safe rope, incomparable in wearing quality to any other cable on the market and is strong, durable and tough.

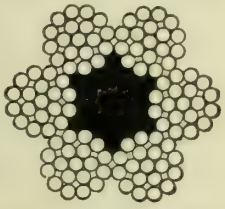
Patent Kilindo Non-Rotating Wire Rope

Derives its name from its tendency not to rotate or spin. For various reasons it is, working under certain conditions, the most economical rope manufactured. The spinning action of every wire rope manufactured, other than Kilindo, affects its longevity. Overcoming it, as is done only in Kilindo Wire Rope, materially prolongs its life. It has 200% greater wearing surface than ropes of ordinary construction. Owing to the increased number of wires and strands it has more flexibility. Constructed entirely of round wires internal friction is eliminated. It will not crush or flatten when subjected to strains. Another important feature of this rope is its tendency not to kink. Also being smooth and round it will not wear drums and sheaves as much as ropes of the ordinary construction. It is manufactured in all grades of steel and iron, such as "Monarch" steel, Plough steel, "MacWhyte" steel, Mild Plough steel, Crucible steel and Swedes iron.

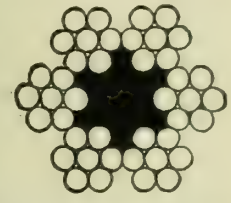
"Macwhyte" Wire Rope

A rope of superior merit, built for mining service where conditions are difficult. Made in various constructions to suit conditions.

This illustration shows our Standard Hoisting Wire Rope, which is composed of six strands of nineteen wires each, laid around a hemp center, making a total of 114 wires. It is the most common rope used for hoisting purposes and is manufactured in all grades of iron and steel, and where sheaves are built to accommodate it it is the most practical rope to use.

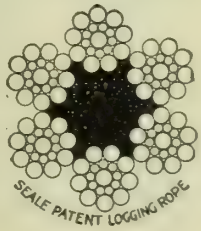


This illustration shows the construction of a wire rope usually termed haulage, transmission or standing wire rope. It is composed of six strands of seven wires each, laid around a hemp center, this making a total of 42 wires. It is constructed in various grades of iron and steel, which grades are suited to different working conditions. These ropes should never be operated over small drums or sheaves, the wires being too coarse.



Seale Patent Wire Rope.

This is a rope composed of six strands of nineteen wires each laid around a hemp core. Each strand is composed of nine large outer wires, nine small inner wires and one large center wire, as shown in the adjoining cut. By this method of construction a rope is produced which is almost as flexible as a standard nineteen-wire rope, in which all the wires in each strand are the same size, but of greater durability in any service where the rope is exposed to unusual abrasion.



The Monarch Patent Mine Car Hitching

Is applicable to all classes of haulage—Electric, Rope or Mule. It is the result of practical experience and experiment conducted with a view of producing a device for all classes of mine haulage, for all local mine conditions, for adaptability to any car, drawbar or load, and made interchangeable, which obviates the necessity of investment in different sizes. Has no screws, nuts, springs or washers to become lost or loose. It is made of malleable iron, the links and clevises are drop forged. Its entire length is twenty-three inches. Operated entirely by hand, either in coupling or uncoupling. Absolutely impossible to become detached.



JOHN A. ROEBLING'S SONS CO.

MANUFACTURERS OF

WIRE ROPE

TRENTON. N. J.

Also CHICAGO, PHILADELPHIA, PITTSBURGH, CLEVELAND, ATLANTA,
John A. Roebling's Sons Co., of New York, New York.
John A. Roebling's Sons Co., of California.
SAN FRANCISCO, LOS ANGELES, SEATTLE, PORTLAND, ORE.

General

The first wire rope used in this country was a Roebling rope. Since its production the manufacture of wire rope has never been interrupted, and as the demand has increased the facilities for production and distribution have expanded so that the Roebling Company now has three works (two at Trenton, N. J., and one at Roebling, N. J.) and has also numerous branches in different parts of the country.

Stocks are kept at warehouses in connection with the branches and these can be drawn on for prompt shipments.

For detailed information apply to any address named above.

Products

Over 400 different sizes and constructions of wire rope are made at the Roebling works. Wire Rope Fittings such as hooks, sockets, etc., are also made and kept in stock for prompt deliveries.

None but carefully selected and thoroughly tested metals are used for Roebling rope. There are several grades of these metals. Those most commonly used are briefly described below.



Rope with 6 Strands of 19 Wires each and a Hemp Center.

Blue Center Steel Rope

Recent advances in the manufacture of steel have made possible the production of a grade particularly well adapted for rope wire, and excelling all others in strength and toughness.

Where conditions are such that the maximum of strength for a given diameter of rope must be obtained, or severe abrasive tendencies exist, blue center steel should be specified.

The largest haulage rope ever made (in use on the Mayari Inclines of the Spanish American Iron Co.,) is a Roebling blue center steel rope. The same is true of the biggest rope used in digging the Panama Canal.

Blue center steel rope is not only well adapted for ropes of unusual size, but it will give the maximum service in the ordinary diameters. To distinguish it from others, blue center steel rope is always made with **a blue hemp center.**

Plow Steel

Up to the time of the production of blue center steel, the strongest and toughest rope was made of plow steel.

Plow Steel comes next in strength to blue center steel and may be used in place of the latter if the maximum strength for the diameter is not essential of if it is not considered necessary to take advantage of the extra power of resistance to abrasion of blue center steel.



Rope with 6 Strands of 37 Wires each and a Hemp Center.

Extra Strong Cast Steel

Extra Strong Cast Steel Rope occupies an intermediate place between cast steel and plow steel. It can be used to advantage in place of cast steel under conditions suitable for the latter, when it is desired to increase the safety of a rope of given diameter.

Cast Steel

Rope made of cast steel is used largely for mine hoists and haulages, and on coal hoists, cableways and conveyors. While cast steel does not have the strength per square inch of the other steels referred to above and lacks the resistence to abrasion of plow or blue center steel, conditions often exists where for a given diameter of rope the stress is not beyond the working strength of cast steel and its wearing qualities are amply sufficient.

In contemplating the selection of a wire rope, if doubt exists as to the grade, we shall be glad to make suggestions on being advised of conditions.

Iron

Iron Rope is used mostly for the operation of the drum type of passenger elevators. It is the best rope for that purpose, but being softer it lacks the strength of steel rope and will not resist abrasion as well. Iron Rope therefore is not economical to use under conditions generally encountered in mining.



Rope with 6 Strands of 7 Wires each and a Hemp Center.

Standard Constructions

The standard construction for hoisting rope is six strands of 19 wires each and a hemp center; for haulage rope, six strands of 7 wires each and a hemp center.

To obtain greater pliability in hoisting rope it is sometimes made of six strands of 37 wires each, or eight strands of 19 wires each.

WATERBURY COMPANY

63 PARK ROW

NEW YORK CITY

MANUFACTURERS OF

Wire and Fibre Rope for Operation of Mines and all General Uses

FACTORY—Brooklyn, N. Y.

BRANCHES

365 East Illinois Street, Chicago, Ill.
220 Franklin Street, Boston, Mass.
113 Davis Street, San Francisco, Cal.
911 Southwestern Life Bldg., Dallas, Texas.
1018 Maison Blanche Bldg., Canal and Dauphin Sts., New Orleans, La.

Products

Wire Rope, Manila and Sisal Rope, Non-Rotating or Non-Spinning Rope, Marline Covered Wire Rope, known as Fibreclad; Waterbury Armored Rope (Gore Patent March 14, 1911).

Waterbury Wire Rope

Is made in grades known as Swedish Iron, Crucible Cast Steel, Extra Strong Cast Steel, Plow Steel and Green Strand Giant Steel, the latter being the highest grade of Improved Plow Steel.

Mining Ropes

The importance of best quality ropes cannot be overestimated owing to the severity of work and danger to life. The size of rope or class of material depends largely on the character of operation, such as hoisting or haulage. Our Engineering Department will gladly render assistance in determining questions as to the most suitable rope for use, in case of incline planes, subdivided into gravity and self-acting systems, engine or power planes, tail ropes or endless rope systems.

Waterbury Armored Wire Rope (Gore Patent Mar. 14, 1911)

Is made 6 strands, 19 wires to the strand, 37 wires to the strand or 61 wires to the strand, according to size and conditions of use. It is furnished in Crucible Cast Steel, Extra Strong Cast Steel, Plow Steel or Giant Improved Plow Steel stock.

The strands in this class of rope are wound or served with flat wires having convex edges, which wires take the abrasion on crown of strands. The initial factor of safety is maintained longer in Waterbury Armored Rope than in any other class of rope. It is most suitable for mining purposes, and particularly so for haulage operations. Waterbury Armored Rope has the advantage over rope of ordinary construction inasmuch as wear on crown strands does not commence until the serving has worn down, and after that period such wire serving becomes packed into the interstices of rope, making it cylindrical and thus materially increasing the efficiency of the rope. A cylindrical rope is less subject to wear on crown strands than rope of ordinary construction.

Fibreclad Marline Covered Wire Rope

A combination rope of wire and the best grade of Tarred Russian Hemp Marline. It replaces Manila or Wire Rope for transmitting power at coal washers, coal breakers or wherever Wire or Manila Rope is used for power transmission purposes. The Tarred Marline affords protection against acid water and moisture, foreign matter, such as coal dust and residue, always prevalent where rope drives are in use. It is not affected by atmospheric conditions, as in the case of Manila Rope or Wire Rope. It is about one-third the diameter of Manila Rope of the same strength. Is flexible and will coil down as readily as Manila Rope. Will outwear bare wire rope under most all ordinary working conditions, likewise Manila Ropes, consequently is more satisfactory in the end. Is also used largely for hoisting and other purposes.

Manila and Sisal Rope (for General Use)

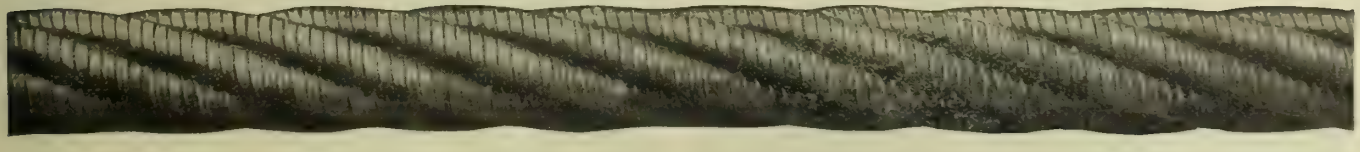
Manila Transmission Rope

We make a special rope for power transmission purposes, made from the best selected Cebu Manila Hemp. Transmission Ropes are made 4 strands with heart, unless otherwise ordered. The yarns are treated with a special composition, which thoroughly lubricates the strands and individual fibres, making the rope as near waterproof as possible. Our Transmission Rope is especially adapted for rope driving and made as nearly perfect as the best machinery, superior quality of material and wormanship can produce.

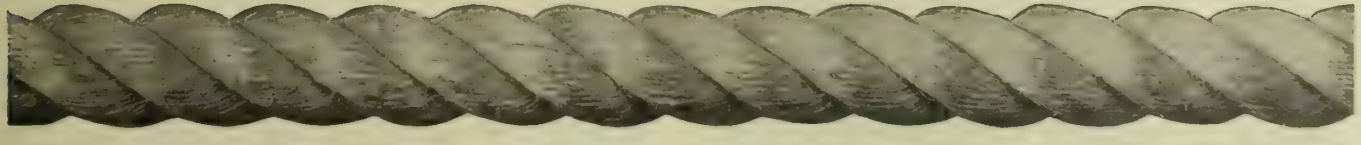
Ask for prices, samples or other particulars.



Waterbury "Green Strand" Giant Steel Wire Rope.



Waterbury Armored Rope (Gore Patent).



Waterbury Fibre Rope—Manila and Sisal.



Waterbury Fibreclad Wire Rope.

WILLIAMSPORT WIRE ROPE CO.,

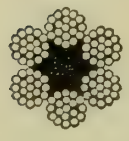
WILLIAMSPORT, PA.,

Manufacturers of

Wire Rope of All Constructions and For All Purposes

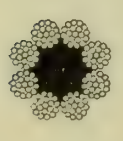
New York	Boston	Pittsburg	San Francisco
33 South St.	79 Commercial St.	546 Second Ave.	541 Howard St.

Standard Flexible Wire Rope



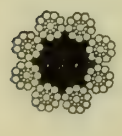
Composed of 6 Strands of 19 Wires each, and a Hemp Center. This rope combines flexibility, strength and durability. It is used on Elevators, Mine and Coal Hoists, Cable Railways, Cranes, Derricks, Drilling, Lumbering, and when galvanized, for Yacht Rigging.

Extra Flexible Hoisting Rope



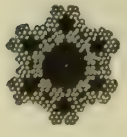
Composed of 8 Strands of 19 Wires each and a Hemp Center. This rope is used for Crane Service, Ore and Coal Handling Machinery; also for other purposes where it is necessary to combine strength with flexibility.

Extra Flexible Seale Lay Hoisting Rope



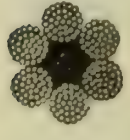
Composed of 8 Strands of 19 Wires each, and a Hemp Center. On account of the large outer wires, it will withstand heavy abrasion. This rope is recommended for lumbering and other special purposes.

Tiller Rope



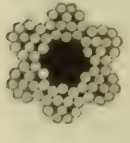
Composed of 6 ropes, each rope being composed of 6 Strands of 7 Wires each, around a Hemp Center, making in all 252 Wires, 6 small and 1 large hemp core. Used for elevator hand rope and steering lines on vessels.

Galvanized Steel Towing Hawsers



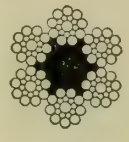
Composed of 6 Strands of 37 Wires, and a Hemp Core. This Hawser is made especially for heavy towing and combines great strength with pliability.

Galvanized Guy Rope and Ships Rigging



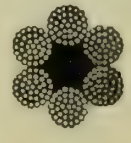
Composed of 6 Strands of 12 Wires each. This rope is cheaper, stronger and more durable than Hemp Rope. Any size not listed made to order.

Seale Lay Rope



Composed of 6 Strands of 19 Wires each, and a Hemp Center. This rope is recommended where large drums or sheaves are used, as it presents great wearing surface to withstand abrasion.

Special Flexible Hoisting Rope



Composed of 6 Strands of 37 Wires each, and a Hemp Center. This rope is designed and used for a special flexible Crane and Dredge rope, having maximum pliability.

Standard Coarse Laid Rope



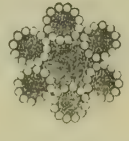
Composed of 6 Strands of 7 Wires each, and a Hemp Center. Used principally for Tronsmission and Haulage, Incline Planes, Sand Lines, Ferry Ropes (when wire center is substituted) and when galvanized for Guys, Ships Rigging, Suspension Bridges, etc.

Williamsport Special Drilling Cable



Composed of 6 Strands of 8 Wires each, and a Hemp Center. This construction combines pliability and strength, and being composed of large wires it has an excellent wearing surface.

Galvanized Iron and Steel Running Ropes and Hawsers



Composed of 6 Strands and a Hemp Center, each strand consisting of 12 Wires and a Hemp Core. Used for Running Rope on Ships and for Ships' Hawsers.

Galvanized Steel Mooring Lines



Composed of 6 Strands and a Hemp Center, each Strand Consisting of 24 Wires and a Hemp Core. Used for Mooring Lines and Hawsers. The weight of this rope is only one-half the weight of hemp rope of equal strength.

CATALOG AND DISCOUNTS ON REQUEST.

WRIGHT WIRE COMPANY

Worcester, Mass.

Manufacturers of

Wire, Wire Rope and Wire Products

Branch Offices:

Boston.....256 Franklin St. Philadelphia .....410 Commerce St.
New York .....256 Broadway. Chicago .....33 West Austin Ave.
San Francisco..... .....111 Townsend St.

Products

Wire Rope; Wire Fencing; Wire Cloth; Wire Lathing; Iron and Steel Wire; Staples; Poultry Netting; Screen Cloth; Ornamental Iron Work of Iron, Brass, or Bronze, such as Elevator Cabs, Gratings, Railings, Window Guards, Gates, Bank



and Office Fixtures. Also all kinds of Grille Work; Wire Partitions; Stock and Tool Room Enclosures; Machinery Guards; Stable Fittings; Clothes Lines; Picture Cord; Coal and Sand Screens, and Foundry Riddles.



Excelsior Wire Ropes are made from specially selected materials in a wide variety of types to meet every engineering need.

Materials

We furnish rope of iron, crucible cast steel, extra strong crucible cast steel, plow steel, and Excelsior plow steel.

The wire is drawn in our own mills under rigid supervision and the greatest care is used in the making of the rope.

Construction

The standard construction for hoisting rope is 6strands of 19 wires each laid about a center core of hemp. Where extra flexibility is desired 6 strands of 37 wires each may be employed.

Haulage rope has usually 6 strands of 7 wires each about a hemp core. This core is thoroughly saturated with a special compound to lubricate the wires and prevent rust.

Uses

We supply ropes for hoisting, haulage, derricks, dredges, power transmission, cableways, tramways, suspension bridges, and all purposes where wire rope can be utilized to advantage.

Fittings

We furnish a full line of wire rope fittings, such as sockets—both open and closed—hooks, thimbles, turn buckles, clamps, etc.

How to Order Wire Rope

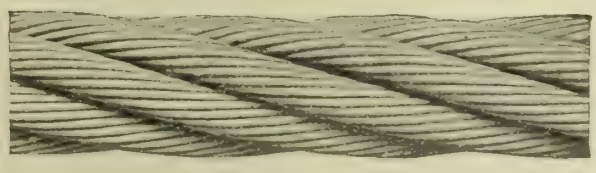
In ordering be sure to state:

1. The diameter of the rope required.
2. Its exact length.
3. The number of strands.
4. The number of wires per strand.
5. The purpose for which it is to be used.
6. The stock from which it is made.

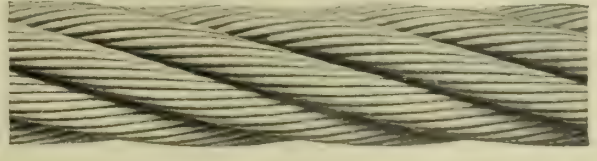
If uncertain what rope is best suited to your needs, state fully the use to which it will be put, giving details of loads, speed, and size of drums or sheaves.



Standard Haulage Rope.
6 strands of 7 wires each around hemp core.



Standard Hoisting Rope.
6 strands of 19 wires each around hemp core.



Special Flexible Hoisting Rope.
6 strands of 37 wires each around hemp core.

ROBT. HOLMES & BROS., Inc.

DANVILLE, ILL.

MANUFACTURES OF

AUTOMATIC CAR LIFT.

Products

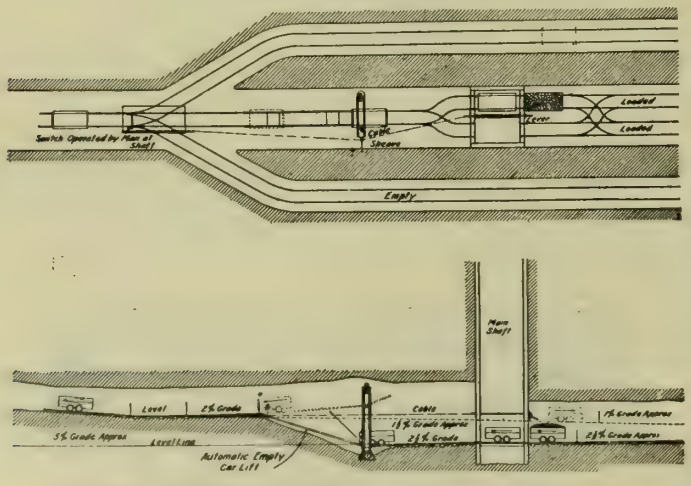
We manufacture Single or Double Automatic Car Lift to handle empty cars in bottom of mines.

Location

The machine is set from twenty to thirty feet from cage landing, opposite load side of shaft. Tracks leading from cage to machine have a fall of three per cent.

Operation

A loaded car is pushed on the cage, bumping off the empty car, which runs down the above mentioned grade until it strikes the forward lever which causes steam or air to be admitted to cylinder by operation of slide valve. Track and car are then elevated to a sufficient height that by gravity the car will be carried far enough back to be reversed and switched to either right or left runaround and thence to main entries, where driver or motorman can hitch on. As the car leaves the movable track it strikes another lever which closes the stream of air ports and opens the exhaust, letting the track down in position for another empty.



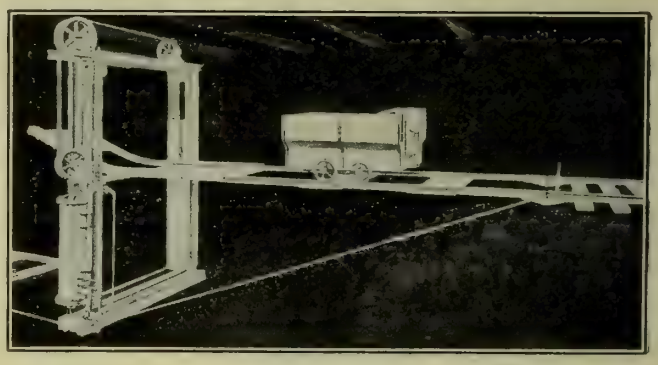
Plan and Cross-Section of Shaft Bottom Arrangements.

The speed of descent of track, and the rapidity of action in lifting cars is controlled by valves which after being adjusted to suit requirements, no further attention to them is required. This machine has a range of from 4 ft. 6 in. to 12 ft. 6 in. not lift above top of cage rails. For other elevations see circular describing No. 1 and No. 3 Lifts, both single and double.

Specifications

The above machine is equipped with 15-in. cylinders, requiring a pressure of 80 to 100 lbs. steam or air.

The feed pipe is 1½ in.



Single Automatic Car Lift and Transfer.

The sheaves are all machined, insuring a long life of the cables.

Cables are ⅝ in. crucible steel, with modern fastenings.

All bearings are large, reducing the wear to a minimum.

All levers are made of cast steel and will last a lifetime.

One ½ pint lubricator for each cylinder is furnished.

The track is made of 60 lb. rails riveted firmly together by ¼ in. steel cross plates and equipped with guard rails.

The frame work is made up of 6 in. I beams and riveted throughout with ⅝ in. rivets.

From four to six cars per minute can be handled with this equipment.

Drawing

The drawings necessary for the erection of machine will be furnished free of charge.

THE AUTOMATIC CAR LIFT is exactly what its name implies. The empty car is taken from the cage and lifted to a height which will allow it to travel by gravity back to main entry, thus entirely eliminating congestion of empties at mine bottom.

The consumption of steam or air is directly proportional to the number of cars handled, consequently there is no waste of power in operation, as the steam or air is used only as each car is raised.

The mechanism is not complicated and does not easily get out of order. Each machine is so constructed that the height of lift may be varied within certain limits, thereby assuring perfect action and proper speed of cars.

The only attention required after installing is an occasional oiling. The workmanship and material are of the best, making a strong and durable machine. Will pay for itself every year. Blue prints mailed upon application and further information cheerfully furnished.



MINE CAR SECTION

Engineering Data

Mine Car Specifications

The following manufacturers have catalogue descriptions in this section:

American Car & Foundry Co.
Atlantic Refining Co.
Enterprise Foundry & Mch. Works.
Fulton Pit Car & Mfg. Co.
Graham Nut Co.
Hockensmith Wheel & Mine Car.
Hyatt Roller Bearing Co.
Irwin Mine Car & Fdry Co.
Kanawha Mine Car Co.
Lobdell Car Wheel Co.
New York-New Jersey Lubricant Co.
Orenstein-Arthur Koppel Co.
Phillips Mine & Mill Supply Co.
Pittsburgh Knife & Forge Co.
Pressed Steel Car Co.
Star Mfg. Co.
Sanford-Day Iron Works.
Watt Mining Car Wheel Co.

For additional descriptions of Mine Cars and Equipment, not appearing in this section, refer to Index of Products in front of book.

Specifications for Mine Cars

TYPE—

Over-hang Sides
Sloping Sides
Straight Sides

CONSTRUCTION—

All Steel
Steel with wood floor
All wood

CAPACITY—

Required

Gauge of Track . . . .in.

Diameter of Wheel, Exclusive of Flange .....in.

KIND OF WHEEL—

Self-Oiling Capless?
Ring Oiling Capless?
Roller Bearing?
Plain Wheels with Rollers in Boxes?

KIND OF AXLE—

Round?
Square?

Size of Axle . . . .in.

" " Iron Front Binder . . ..in.

" " " Center " . . . .in.

" " " Rear " . . . .in.

" " " Draw Bar . . ..in.

Diam. of Coupling hole in Draw Bar .....in.

Send rough Sketch of draw bar.

Width of Car clear inside at top . .....in.

Depth of Car clear inside . . ..in.

Length of Car clear inside . . ..in.

Length Car overall including Bumpers .....in.

Height Car overall above top of rail .....in.

THICKNESS OF MATERIALS—

Sides . . . .in.

Bottom . . . .in.

Distance to center of Axles, (Wheel Base) . . . .in

Send rough sketch and dimension of Bumpers.

DO YOU WISH BRAKE—

Single?
Double?

If Single Brake, on which side when facing car from rear?

STYLE OF DOOR—

Lift Door?
Gate hinged at Top?
Gate hinged at Side?
Send rough sketch and dimensions of Couplings.

U. S. STANDARD SYSTEM OF BOLTS AND NUTS

As Recommended by the Franklin Institute, of Philadelphia, December 15, 1864.

Diameter of Bolt	Number of Threads per Inch	Diameter of Hole in Nut	Short Diameter of Nut*	Diameter of Bolt	Number of Threads per Inch	Diameter of Hole in Nut	Short Diameter of Nut
¼ in.	20	.185	½ in.	2 in.	4½	1.712	3⅛ in.
5/16 "	18	.240	19/32 "	2¼ "	4½	1.962	3½ "
⅜ "	16	.294	11/16 "	2½ "	4	2.175	3⅞ "
7/16 "	14	.344	25/32 "	2¾ "	4	2.425	4¼ "
½ "	13	.400	⅞ "	3 "	3½	2.628	4⅝ "
9/16 "	12	.454	31/32 "	3¼ "	3½	2.878	5 "
⅝ "	11	.507	1-1/16 "	3½ "	3¼	3.100	5⅛ "
¾ "	10	.620	1¼ "	3¾ "	3	3.317	5¾ "
⅞ "	9	.731	1-7/16 "	4 "	3	3.566	6⅛ "
1 "	8	.837	1⅝ "	4¼ "	2⅞	3.825	6½ "
1⅛ "	7	.940	1-13/16"	4½ "	2¾	4.027	6⅞ "
1¼ "	7	1.065	2 "	4¾ "	2⅝	4.255	7¼ "
1⅜ "	6	1.060	2-3/16 "	5 "	2½	4.480	7⅝ "
1½ "	6	1.284	2⅜ "	5¼ "	2½	4.730	8 "
1⅝ "	5½	1.389	2-9/16 "	5½ "	2⅜	5.053	8⅛ "
1¾ "	5	1.490	2¾ "	5¾ "	2⅜	5.203	8¾ "
1⅞ "	5	1.615	2-15/16"	6 "	2¼	5.423	9⅛ "

* Or Size of Wrench.

HORSE POWER TRANSMITTED BY LEATHER BELTS

(A) Single Belts 1 Inch Wide, 800 Feet Per Minute—1 Horse-Power

Speed in Feet per Minute	WIDTH OF BELT IN INCHES											
	2	3	4	5	6	8	10	12	14	16	18	20
	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.
400	1	1½	2	2½	3	4	5	6	7	8	9	10
600	1½	2¼	3	3¾	4½	6	7½	9	10½	12	13½	15
800	2	3	4	5	6	8	10	12	14	16	18	20
1000	2½	3¾	5	6¼	7½	10	12½	15	17½	20	22½	25
1200	3	4½	6	7½	9	12	15	18	21	24	27	30
1500	3¾	5⅝	7½	9⅜	11¼	15	18¾	22½	26½	30	33¾	37
1800	4½	6¾	9	11¼	13½	18	22½	27	31½	36	40½	45
2000	5	7½	10	12½	15	20	25	30	35	40	45	50
2400	6	9	12	15	18	24	30	36	42	48	54	60
2800	7	10½	14	17½	21	28	35	42	49	56	63	70
3000	7½	11¼	15	18¾	22½	30	37½	45	52½	60	67½	75
3500	8¾	13	17½	22	26	35	44	52½	61	70	79	88
4000	10	15	20	25	30	40	50	60	70	80	90	100
4500	11¼	17	22½	28	34	45	57	69	78	90	102	114
5000	12½	19	25	31	37½	50	62½	75	87½	100	112	125

HORSE POWER TRANSMITTED BY LEATHER BELTS—CONTINUED

(B) Double Belts 1 Inch Wide, 550 Feet Per Minute—1 Horse-Power

Speed in Feet Per Minute	WIDTH OF BELT IN INCHES										
	4	6	8	10	12	14	16	18	20	22	24
	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.	H. P.
400	2¾	4¼	5¼	7¼	8½	10	11½	13	14½	16	17½
600	4¼	6½	8¾	11	13	15	17½	19½	22	24	26
800	5¾	8½	11½	14½	17½	20½	23	26	29	32	34½
1000	7¼	11	14½	18¼	21½	25½	29	32½	36	40	43½
1200	8½	13	17½	22	26	30¼	34½	39	44	48	52½
1500	10¾	16¼	21¾	27¼	32½	38	43½	49	54½	60	65½
1800	13	19½	26	32¾	39	45½	52	59	65½	72	78½
2000	14½	21¾	29	36½	43½	50½	58	65½	72½	80	87
2400	17¼	26	34¾	44	52½	60½	69½	78½	88	96	105
2800	20¼	30½	40½	51	61	71	81	91½	102	112	122
3000	21½	32½	43½	54½	65½	76	87½	98	108	120	131
3500	25½	38	50¾	63½	76	89	101	114	127	140	153
4000	29	43½	58¼	72¾	87	101	116	131	147	160	174
4500	32½	49	65	82	98	114	131	147	163	180	196
5000	36½	54½	72¾	91	109	127	145	163	182	200	218

N. B.—Belts are supposed to be not overstrained, so they will last.

AMERICAN CAR & FOUNDRY CO.

General Offices

New York Chicago St. Louis

WORKS

Berwick, Pa.	Detroit, Mich.	Jeffersonville, Ind.	St. Charles, Mo.
Bloomsburg, Pa.	Depew, N. Y.	Madison, Ill.	St. Louis, Mo.
Buffalo, N. Y.	Huntington, W. Va.	Memphis, Tenn.	Terre Haute, Ind.
Chicago, Ill.	Indianapolis, Ind.	Milton, Pa.	Wilmington, Del.

Manufacturers of

Steel, Wood and Composite Steel and Wood Mine Cars, all designs.

Mine Car Trucks.

Logging Cars.

Dump Cars.

Industrial Cars.

Railway Cars for Freight and Passenger Service.

Chilled Iron Wheels of all kinds.

Self-Oiling and Plain Wheels.

Roller-Bearing Wheels and Roller-Bearing Journal Boxes.

Chilled Iron Pump Plungers.

Sheave Wheels. Rollers.

Cast Iron Flange Pipe and Fittings.

Castings for All Purposes.

Refined Iron Bars and Forgings.

Motor Wheels and Axles.

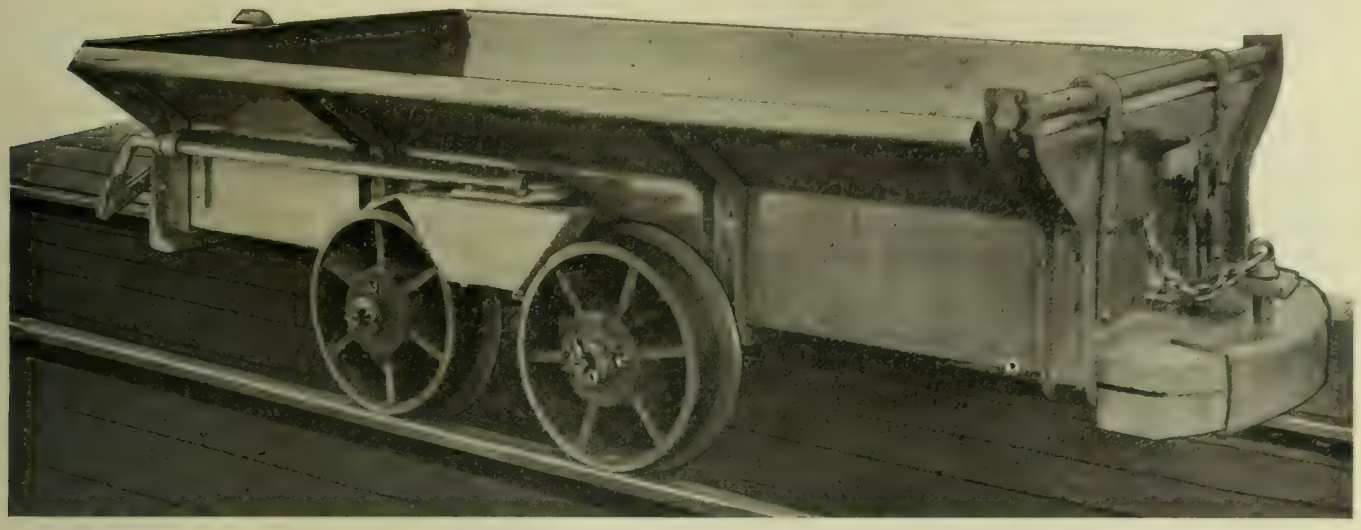
Refitting a Specialty.

Submit Your Mine Car and Wheel Troubles to Us.

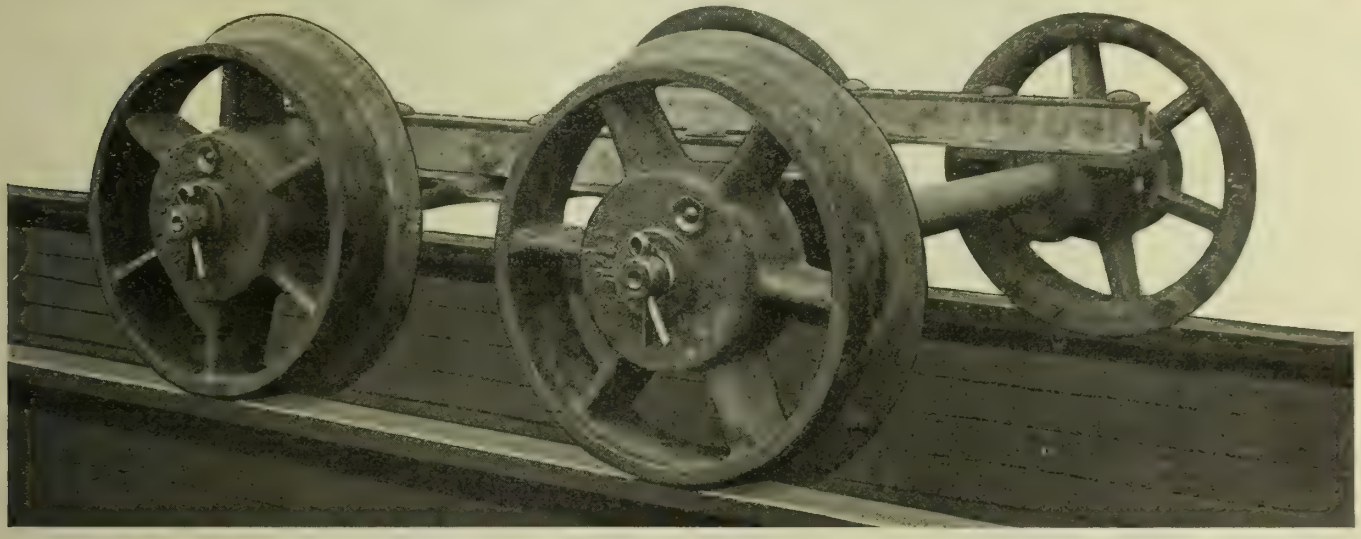


A Photograph of one of Our Wheel Platforms, Which Gives an Idea of Our Large and Varied Output.

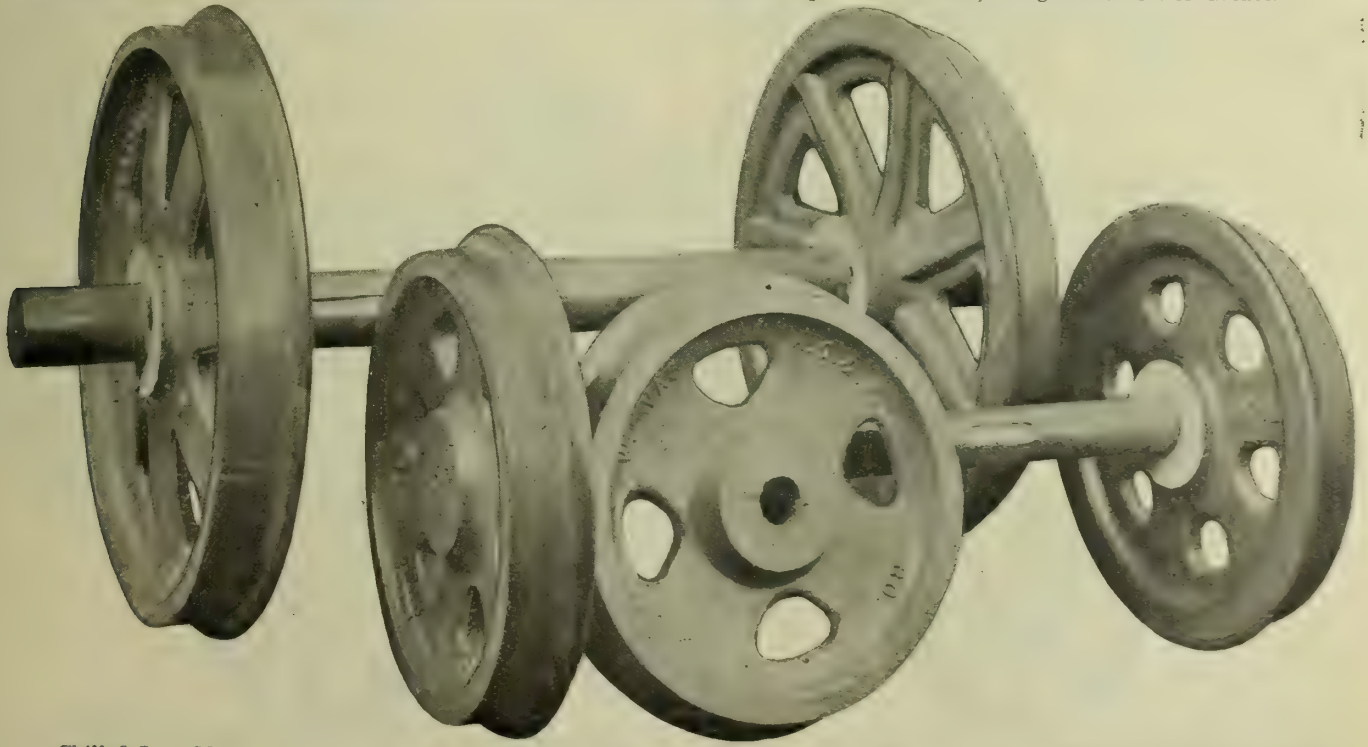
We are shipping ten thousand to twelve thousand mine car wheels per month, and our business is steadily increasing, because of the quality of our product.



Steel and Wood Soft Coal Car, Capacity 1 Ton 5 Cwt., Sectional Steel Sides, Pressed Roll Top, Steel Ends, Channel Section Bands, Wood Floor, Weight 1,600 Pounds.



Our Standard Mine Car Truck, Loose Wheels and Axles, Closed or Open Hub Wheels, Designed for Oil or Grease.



Chilled Iron Motor Wheels. We Are Prepared to Refit New Wheels on Old Axles or Furnish Wheels and Axles Complete.

THE FULTON PIT CAR & MFG. CO.

CANAL FULTON, O.

MINE CAR SPECIALISTS

Manufacturing

Wood, Steel or Composite Mine and Clay Cars, Mine Car Irons, Trucks and Wheels to any Specifications

Main Office and Works, Canal-Fulton, O.

SUBSTANTIAL PROFITS ARE REALIZED BY MINE OWNERS USING



MODERN CAR EQUIPMENT MADE IN OUR EFFICIENT FACTORY

Progressive Operators and Miners Recognize the High Standard of Fulton Cars and Wheels.

Materials

Those entering into our products are the best obtainable and give maximum results. They are rigidly inspected, thus insuring constant quality and are treated and finished in our own factory after the most approved and up-to-date methods. White Oak Lumber used in our cars is carefully selected and inspected. The Chemical and Physical Tests of our Wheel Mixtures, are carefully supervised. No scrap-iron is used and we guarantee a superior wheel of great strength and deep chill.

Workmanship

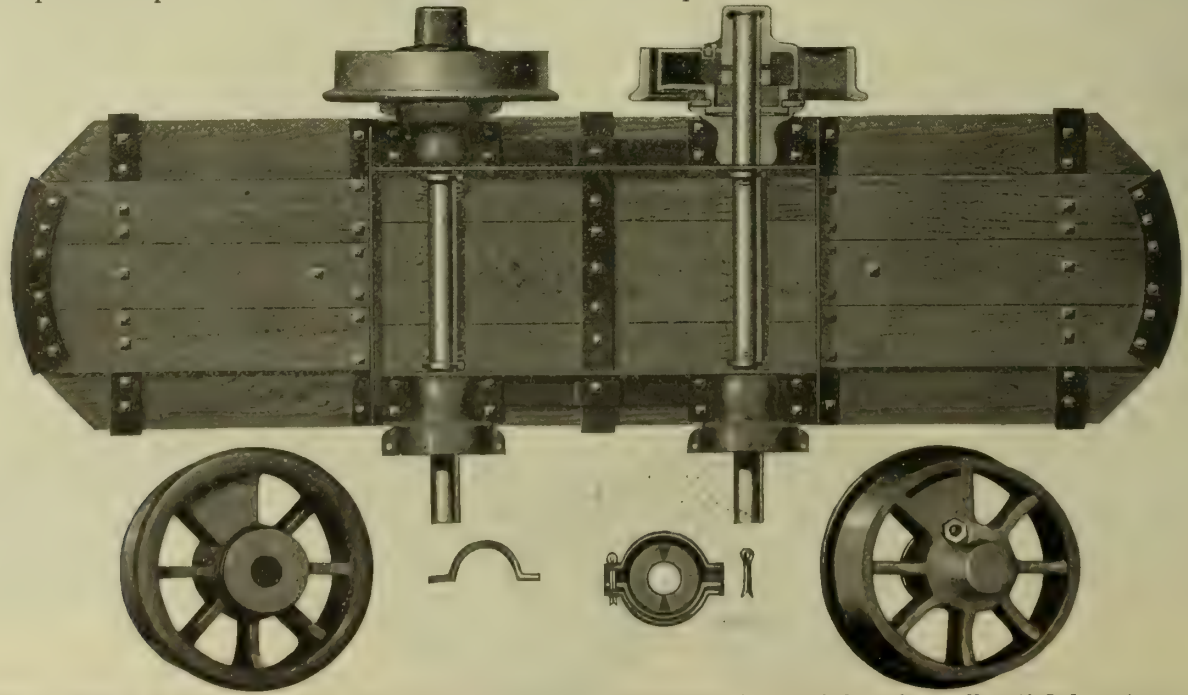
is of the highest quality, Our employees are trained and efficient specialists and absolute, expert workmanship, features each particular part of our construction work.

Cars

We construct cars to suit any required specifications or local conditions. Our Engineers are at your service gratis. We check and call attention to all weak points in any specifications coming to our offices. Approved specifications are strictly adhered to. Each completed car is examined for flaws or variations before shipment. We guarantee our Cars to stand the most exacting tests.

Car-Irons

Fulton Car-Irons may be duplicated at any time. All repair parts can be replaced, and they will fit. This is important to the Mine Superintendents. Our Irons are well made, correctly shaped, and their enduring qualities, cannot be surpassed.



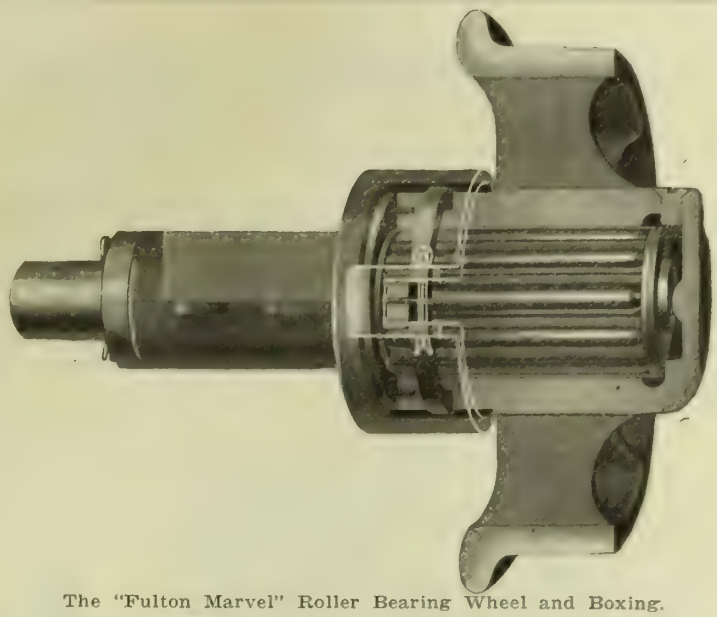
The effectual service given by our Angle Bar Truck construction is testified to by well satisfied customers.

Trucks

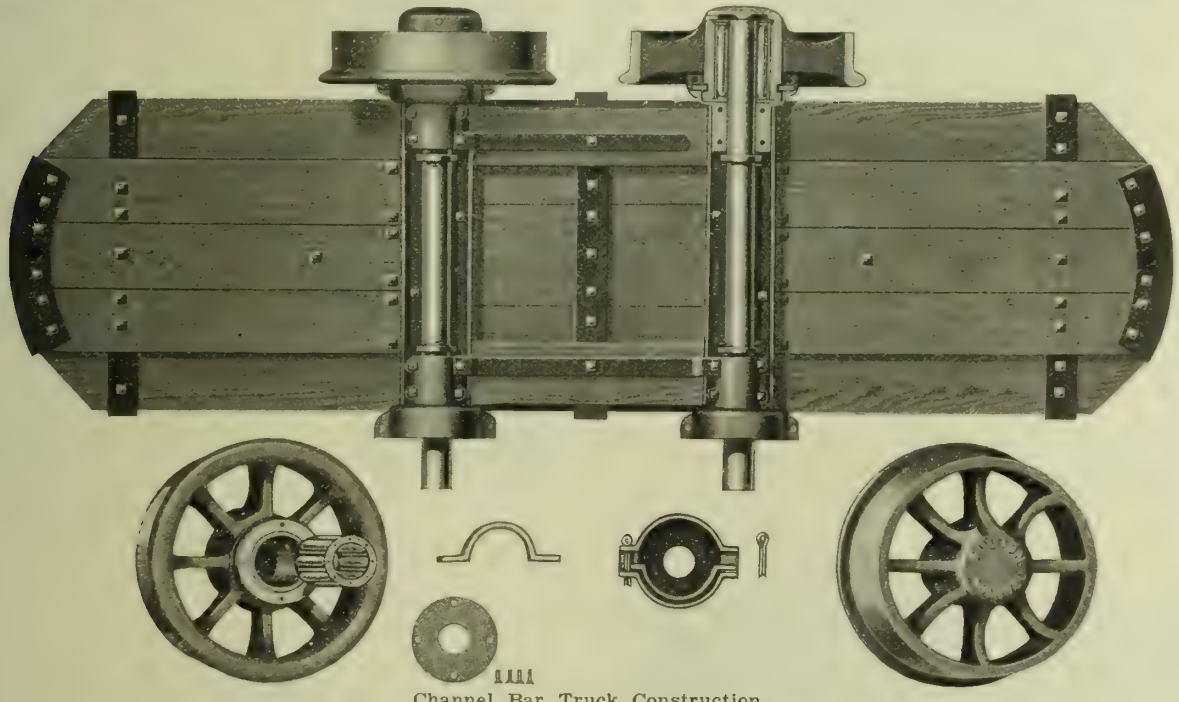
We call attention to our Angle Bar Truck Construction, which consists of two side angles, two cross angles and heavy ribbed boxes supporting the axle. This particular Truck can be fitted to any car. It can be made, also, to conform to your present wheel standard. The inability to get out of alignment is one of the strong features of this Truck, as it makes the car durable, and easy running. We build any other desired style of Trucks.

Wheels

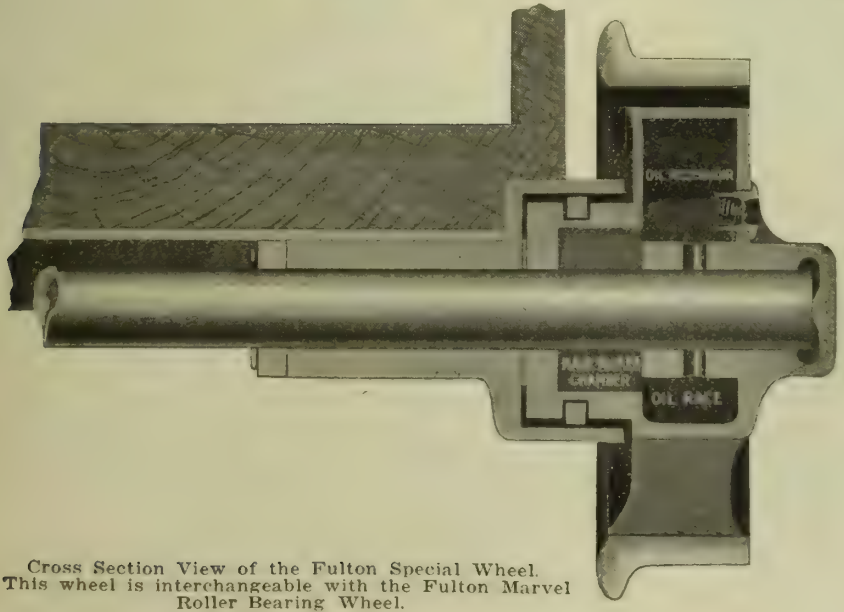
Our Improved Roller Bearing Wheel, is the most valuable proposition we offer. It is recognized as the best qualified wheel of its kind on the market, and is the result of long years of experiment and study along the line of anti-friction bearings. The design is simple, and all parts are easily accessible. It excells in every detail, other so-called Roller Bearing Wheels, being easily removed and requiring lubrication but once or twice a year. Our Marvel Roller Bearing Wheel and Special Hair-Packed Self-Oiling Wheel, are interchangeable. We manufacture the Fulton Open-faced, Hair-packed, Cage Valve Oiling Wheel, which has given complete satisfaction and has proven itself to be one of our best sellers. Our other constructions cover any style of wheel to conform with any particular designs or measurements. Full description of our different wheels will be mailed upon application.



The "Fulton Marvel" Roller Bearing Wheel and Boxing.



Channel Bar Truck Construction.



Cross Section View of the Fulton Special Wheel. This wheel is interchangeable with the Fulton Marvel Roller Bearing Wheel.

Location and Facilities

Our Shops are located at Canal Fulton, Ohio, on the B. & O. and Penna. Railroads, 56 miles southwest of Cleveland, Ohio. The Capacity and Output of the Plant has been materially increased within the past year. The machinery and equipment throughout is the most modern and efficient obtainable. The employees are men of unusual ability who aim at the highest notch of efficiency.

Catalog

Descriptive literature and Catalog explaining all our new features and products will be sent to you upon request.

Organization, efficiency and modern equipment, is the key to our low prices and unquestioned quality.

ENTERPRISE FOUNDRY & MACHINE WORKS

Mine Wheel Department

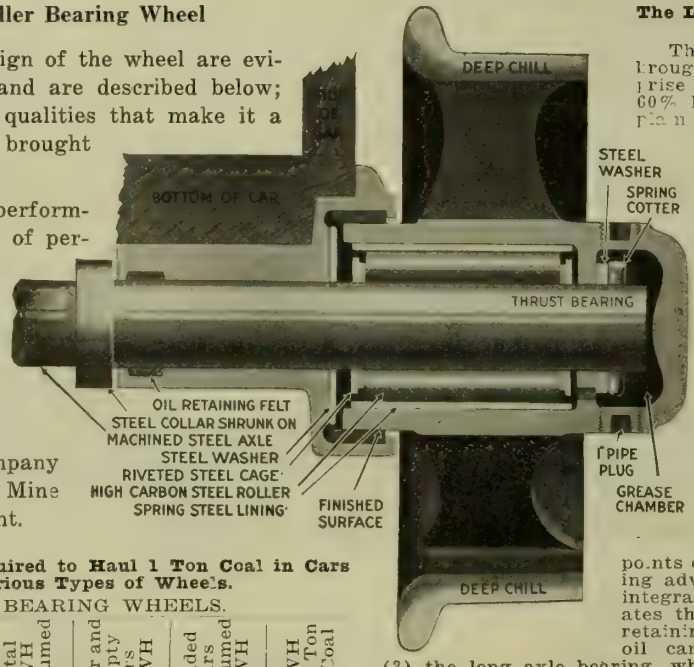
OFFICE AND WORKS: BRISTOL, TENNESSEE

Manufacturing Enterprise Chilled, Annealed, Self-Oiling, Roller Bearing Car Wheels for Mines and Industrial Railways. Car Trucks of All Types to suit every condition and service.

The Enterprise Improved Roller Bearing Wheel

The construction and design of the wheel are evident from the illustration, and are described below; the unseeable metallurgical qualities that make it a remarkable wheel will be brought out later.

But the actual, attested performance of the wheel—the kind of performance that is guaranteed by the contract reproduced below—is of first interest and importance to mining men. We, therefore, show that first. The test was made by engineers of the Stonega Coal & Coke Company on April 24th of this year at Mine No. 4 of the Roda, Va. Plant.



Test to Determine KWH Required to Haul 1 Ton Coal in Cars Equipped With Various Types of Wheels.

Run	Average Min. Elapsed Time	Total KWH Consumed	Motor and Empty Cars KWH	Loaded Cars Consumed KWH	KWH Per Ton of Coal
BUSHED PLAIN BEARING WHEELS.					
No. 1	8. sec.	7.2	1.8	5.4	.18
No. 2	7.25 sec.	7.6	1.8	5.8	.193
Average	7.42 sec.	7.4	1.8	5.6	.1865
WELL KNOWN ROLLER BEARING WHEEL.					
No. 1	6.40 sec.	5.4	1.8	3.6	.12
No. 2	6.25 sec.	4.6	1.8	2.8	.093
No. 3	6.25 sec.	3.8	1.8	2.	.066
Average	6.30 sec.	4.6	1.8	2.33	.093
ENTERPRISE ROLLER BEARING WHEEL.					
No. 1	6.45 sec.	4.4	1.8	2.6	.086
No. 2	6.05 sec.	4.4	1.8	2.6	.086
No. 3	5.30 sec.	3.6	1.8	1.8	.060
Average	6.06 sec.	4.13	1.8	2.33	.077

Test made at Roda plant of Stonega Coke and Coal Company in Mine No. 4 on Main Line Haulage, 35 lb. Steel, well bonded for whole 3000 ft. (3000') track; in fair condition for average haulway; 200' Rad. Curve 200' long.

Grades

1200 ft. 2 to 3% Adverse.
700 ft. 1 to 2% Adverse.
800 ft. Level.
300 ft. 1 to 2% Favorable.

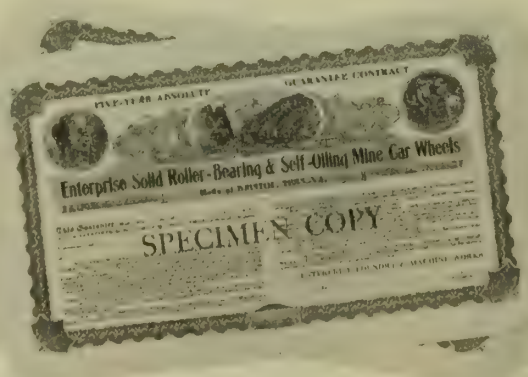
Motor used, G. E. Type HM 709. 13 Ton 136 HP.

All wheels of different types in good average condition.

Weight of Cars, Total 30,000 lbs. Weight of Coal, 60,000 lbs. Total load 90,000 lbs, or 45 tons net total load.

W. S HOBBS,
D. B. SAYERS,
G. B. SOUTHWARD,
H. B. PRICE, Jr.,
SHADE BANKS,
Stonega C. and C. Co.

Roda, Va., April 24, 1915.



This is a **signed** 5-year contract with the buyer, absolutely and unqualifiedly guaranteeing perfect **wheel service.**

The Lesson of the Test

This careful watt-hour-meter test brought out conclusively that Enterprise Roller Bearing Wheels require 60% less power to haul than the best plain bearing (brass bushed) wheels; that another high grade roller bearing wheel requires fifty per cent less power—**ten** per cent **more** than Enterprise Wheels.

This shows Enterprise Wheels to effect a power-saving of **twenty** per cent even over the other high grade roller bearing wheel.

The advantage that is given Enterprise Wheel users in these exclusive power-saving qualities goes without saying.

Mechanical Features

The chief feature is the perfectly balanced design, which keeps the center-line of load always over the center of the roller bearing.

Details of construction are noted on the engraving; and points of design that are of great operating advantage are (1) the hub cap cast integrally with the wheel—which eliminates the danger of its loss; (2) the oil retaining features, due to the fact that oil cannot leak through solid metal; (3) the long axle bearing, which relieves the carbody of running strains.

Metallurgical Features

The iron mixtures and depth of chill are obtained under the personal supervision of ASA W. WHITNEY, the grandson of the founder of the chilled wheel industry. This company, through him, has at its disposal the complete metallurgical records of A. Whitney & Sons, and of this company, dating back to 1847. Enterprise Wheels, then, have behind them the accumulated experience of 68 years of chilled-wheel making.

The Guarantee

This is reproduced below. It is the most liberal and far-reaching of any guarantee ever signed by a wheel maker. It makes absolutely impossible anything but a satisfactory and profitable investment. It is an iron-clad assurance of the fact that Enterprise Wheels make good, and cannot do otherwise.

In Conclusion

Every mining man interested in rolling equipment should be thoroughly familiar with the all-embracing paragraphs of this guarantee. A request will bring a specimen copy, together with any desired special information as well as a comprehensive catalog that shows in detail how Enterprise Wheels are made, and why we can enter safely into this sweeping guarantee.

We will gladly confer with you to analyze your individual needs.

THE HOCKENSMITH WHEEL & MINE CAR CO.

PENN STATION, PA.

Products

Mine Car Wheels, any style; Self-Oiling or Roller Bearing; Angle Bar Truck, (Strong where others are weak); Mine Cars; Steel, Wood or Composite; Cast Iron Pipe; Frogs; Turnouts; Mine Car Hitchings; Motor Wheels, Steel Tires Re-Turned.

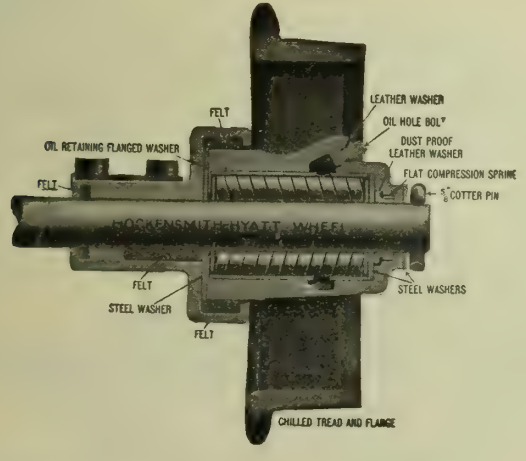
Wheels

The characteristics of the mine car wheels manufactured by us are strength and deep chill. These results are only obtained by the use of high grade irons and our process of Annealing. In this day of motor haulage at high speeds, heavy cars, etc., the importance of a first class wheel cannot be overestimated.



"Eureka" Wheel

This wheel is a simple self-oiling one of the exposed linch pin type. The fact that it has been adopted to the exclusion of all others by a number of the largest mining companies in North America is, we believe, sufficient evidence of the fact that it must possess exceptional merits. We have provided in our "EUREKA" Wheel an oil chamber of such proportions as will insure its operation for a period of three to five weeks with one oiling.

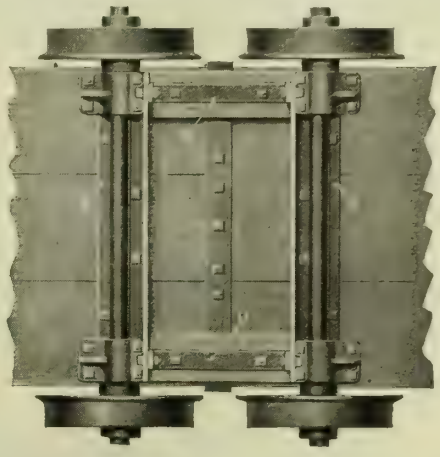


Hockensmith-Hyatt Roller Bearing Wheel

The roller bearing wheel manufactured by us incorporates the Hyatt Flexible Nickel Chrome Steel Roller. The various parts used in this design of wheel are shown in the photograph. This roller bearing wheel has been tested under the most severe conditions, and has proven its ability to meet them. Requires oiling but two to three times per year.

Angle Bar Truck

The angles placed across the bottom are 6″ x 3½″ x ⅜″, and equivalent in strength to a three inch square axle with twice the bearing surface. The angles hold the boxes absolutely rigid, insuring correct gauge and permanent wheel base. The Cold Rolled Steel Axles



are full section throughcut and free to turn in the felt packed boxes. This Truck eliminates Repairs, "Wobbly" Cars and cut out wheels. Can be used on any type of car and adapted to any style of wheel.

Mine Cars

The local conditions surrounding every mining operation determine the style of car to be used. We can construct cars either from your design, or upon receipt of sufficient information, we will be glad to



submit ours. The composite steel car shown in the photograph is one of eight hundred built for one company. This car is composed of ¼″ separate flanged plates, bolted on. The bottom is of 3″ white oak. The latch is our "Correll" design, which can be automatically opened, and is self-closing. The Angle Bar Truck is used on this car, with the Hockensmith-Hyatt Roller Bearing wheels. We are in position to construct all steel cars, either bolted or riveted, as may be desired.

Catalogue

Our latest catalogue illustrates and describes our products more in detail, and we would be glad to send this to you upon request.

IRWIN FOUNDRY & MINE CAR CO

Factory and Office, IRWIN, PA.

Manufacturers of Mine Cars and Wheels

Products

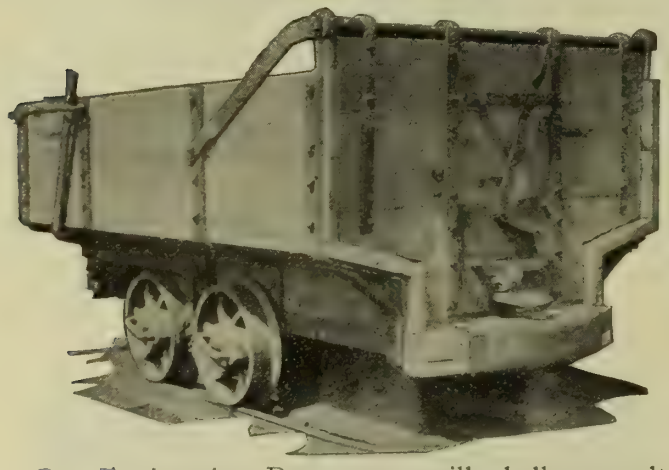
MINE CARS—Any Type.

WHEELS—For Mine Cars and Industrial Trucks, Roller-Bearing or Plain Self-Oiling.

CASTINGS—High Grade Grey Iron Castings of all kinds.

Mine Cars

We build all types of Mine Cars. The car illustrated below is one of a thousand that we have built for one firm during the past year, and is equipped with many of our best features: vis.; the Steel Center Bumper; the Auxiliary Drawbar; the Channel-Bar Truck; Dust-Proof Bearings; Cold Rolled Steel Axles; the "Yoke-Oiler" Wheel. These are all features that have been developed to meet the present-day demand for a car that will stand hard usage with light maintenance cost



Our Engineering Department will gladly consult with you, and design a car to suit your conditions. If you build your own cars, we can furnish the irons all ready punched and bent, at prices that will attract you. For the irons, we use only the best grade of open hearth steel.

Grey Iron Castings

We make a specialty of all kinds of close-grained Iron Castings, especially for mine use; such as—Frogs, Piston Heads and Rings, Bushings, Liners, Bearings, Grate Bars, Boiler Door Liners, Coke Oven Frames, Pipe Specials, Etc.

LET US BID ON YOUR CASTING AND PATTERN WORK.

Wheels

We have made many kinds of wheels, but our experience has shown us that the wheels illustrated above will suit the conditions at any mine. All our Wheels are made of the best grade of pig iron, and are well chilled and carefully annealed.

"The Solid Hub"



The advantages of this wheel are obvious. The oil hole is on center, and, therefore, is easily accessible. The wheel can be half-full of oil at all times, making frequent oiling unnecessary.



"The 'Yoke' Wheel"

Our "Yoke" Wheel was developed from the Solid Hub Wheel, and has all its good features. The oil hole is centrally located; the wheel is, therefore, easily oiled; the oil chamber is large, the wheel will, therefore, run a long time on one oiling; the linch pin is accessible and the wheel is, therefore, easy to put on and take off.

"The Spring-Oiler"



This is the wheel that you should use when there are some special conditions that require that no part of the wheel or car shall protrude beyond the end of the axle. This wheel has a large oil chamber and can run through grit or water without injury to the wheel.

Other Wheels

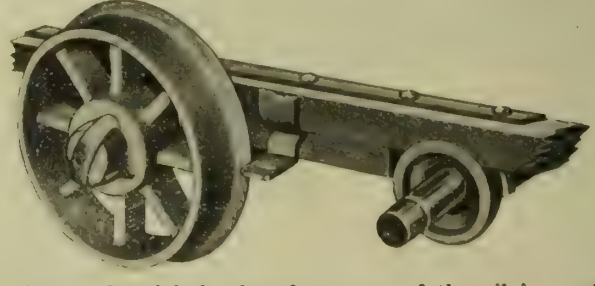
If you have a Wheel of any special design, or have any preference for some standard design, other than those described above, we would be pleased to quote you prices.

The Sensenich Truck

The very newest departure in mine car equipment. The features of the wheel that will especially appeal to the operating man are as follows:

It is always in gauge, therefore runs easily without washering out or in.

It is a center oiler, therefore easily oiled.



It has a closed hub, therefore none of the oil is wasted, all of it lubricates either the wheel or the bearing.

It can be easily put on or removed.

The truck is equipped with Cold Rolled Steel Axles, and dustproof boxes, with channels for heavy, big vein cars; without channels for light, low vein cars.

We would be pleased to furnish you a truck for six months' trial.

KANAWHA MINE CAR COMPANY

CHARLESTON, W. VA.

PRODUCTS

Manufacturers of Mine Cars, Plain and Rolling Bearing Wheels, Car Irons, Logging and Lumber Trucks, Sheaves, Rollers and Castings of all kinds.

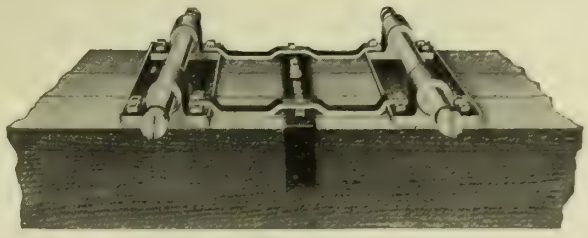
General Machinists, Iron and Brass Founders.

KANAWHA MINE CARS.

Meet every condition that mine cars must meet. THE REASON—Kanawha Cars are built to order from specincations, of the highest grade materials and for the best interests of the user. As a result, a vast number of operators are now buying Kanawha Cars exclusively.

Every operator recognizes the need of special adaptions in height, width, capacity and other details. Efficient roadmen, practical in every sense, are ready to help you work out the design best suited to your needs.

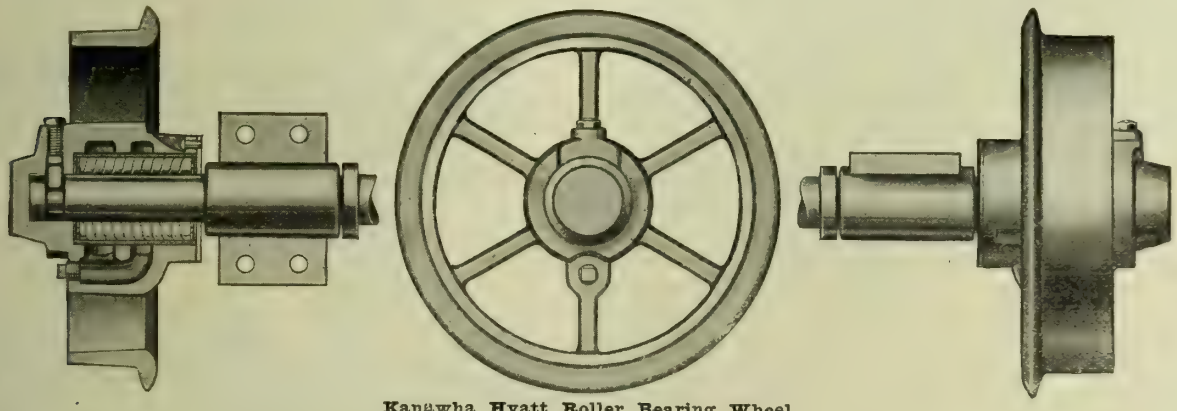
KANAWHA-HYATT ROLLER BEARING WHEELS give the maximum of efficiency in durability, ease of running and in economy in oil and repairs. These wheels soon pay for themselves in oil saved. Each wheel holds a full quart of oil, enough in all cases for eight to twelve months running.



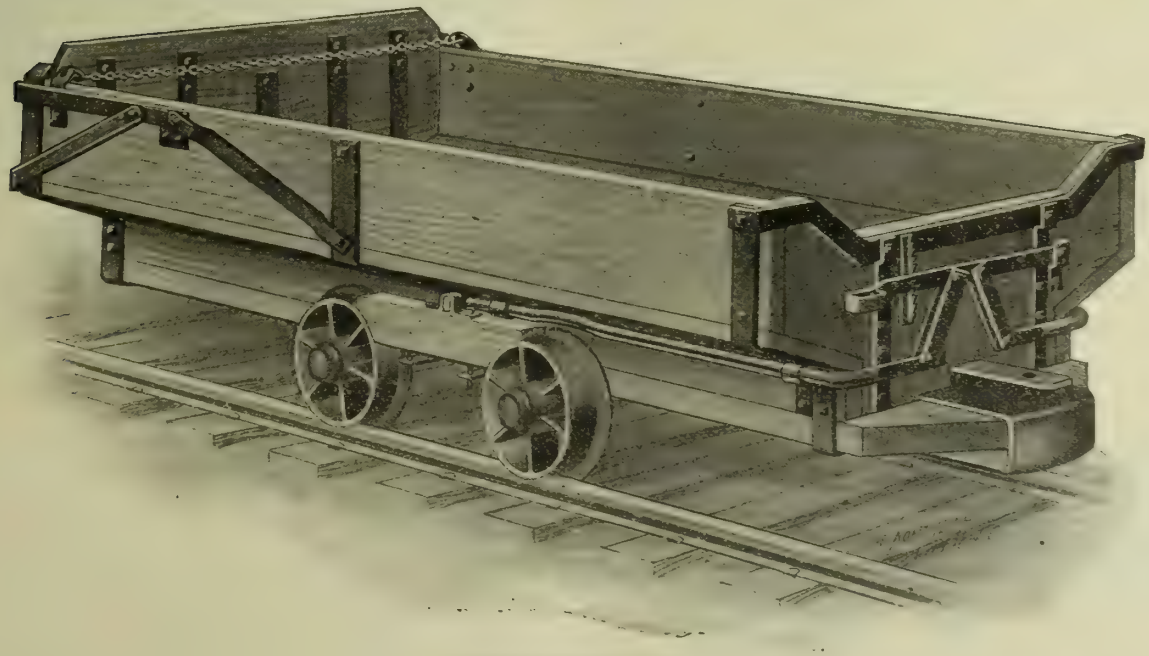
Our Channel Construction.

The above illustration shows our channel construction of what has proven to be the strongest and best mine car running gear on the market. The boxes are absolutely rigid and prevent all wobbling. Either round or square axles and any style wheel may be used.

Send today for our latest Mine Car Catalog.



Kanawha Hyatt Roller Bearing Wheel.



A Kanawha Mine Car

LOBDELL CAR WHEEL COMPANY

ESTABLISHED 1836

WILMINGTON, DEL.

Steel and Iron Founders and Machinists

Products

Car Wheels of all descriptions.

Plain, Self-Oiling, or Roller Bearing Equipments, especially designed for Mine Service.

Wheels, Axles and Tires for all types of Mine Locomotives.

Refitting or Repairing of any kind.

Chilled Iron Pump Plungers.

Car Wheels

The large plant of this company has been especially designed and equipped for the manufacture of car wheels and other articles of chilled iron or cast steel. It is the most up-to-date and modern plant of its kind in the country and is fully equipped to make car wheels of any description and for every service. This company does not build car bodies, being specialists in the manufacture of car wheels, running gear, and chilled iron and steel castings.

Mine Car Wheels

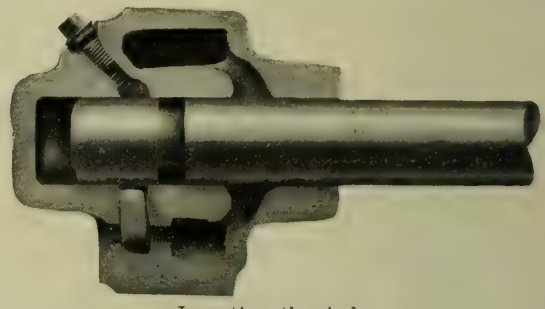
The ever-increasing loads and severity of service due to motor haulage, long hauls, high speeds, etc., make it necessary that the irons used in the manufacture of car wheels for mine service be most carefully selected for both strength and character (depth and hardness) of the chill. Our experience of over 75 years in the manufacture of car wheels has enabled us to make wheels unexcelled in their strength and noted for their long-wearing characteristics. Our especially constructed annealing furnaces make the arms and hubs tough and strong without drawing or softening the chill. We are fully equipped to make wheels of any description, either furnishing the wheels, axles, and pedestals complete or the wheels only, suitable for use with axles already installed. Our long experience, however, prompts us to recommend the following types as being the most efficient in their respective classes:

The "Faught" Closed-Hub Self-Oiling Wheel

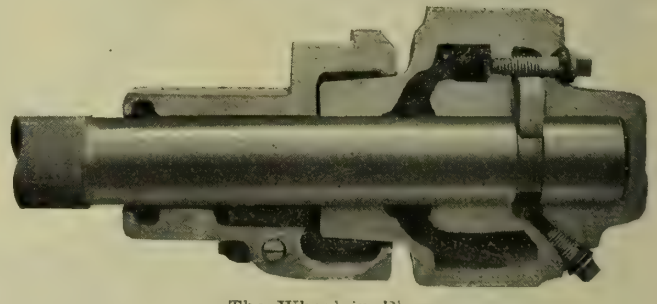
This is the pioneer Closed-Hub Self-Oiling Mine Car Wheel, and is still in the lead. Mr. Luther R. Faught, the patentee of this design, was originally associated with the A. Whitney & Sons foundry of Philadelphia, by whom the "Faught" wheels were first made and sold. On this account they became known as "Whitney" wheels, and even now the "Faught" wheels are so called in many localities. In 1896, when Whitney's ceased operations, Mr. Faught became associated with this company, who purchased the sole control of his patents and who, since his death, have continued to improve this equipment. Compare this wheel with any other and note the simple and secure fastening; the solid closed hub—no expensive gaskets or leaky wheels to oil the track; the generous oil cavity, which holds enough oil to last several months; and the extra long wheel bearing (8″ evenly balanced), which insures against wobbly wheels. The accompanying photographs clearly show the design and operation of this wheel, which is used exclusively in many coal and metal mines in Cuba, Central America, Mexico, and all parts of the United States.



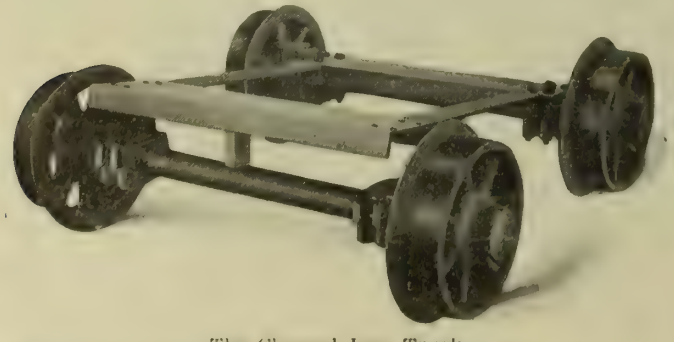
Placing the "Key Block"



Inserting the Axle



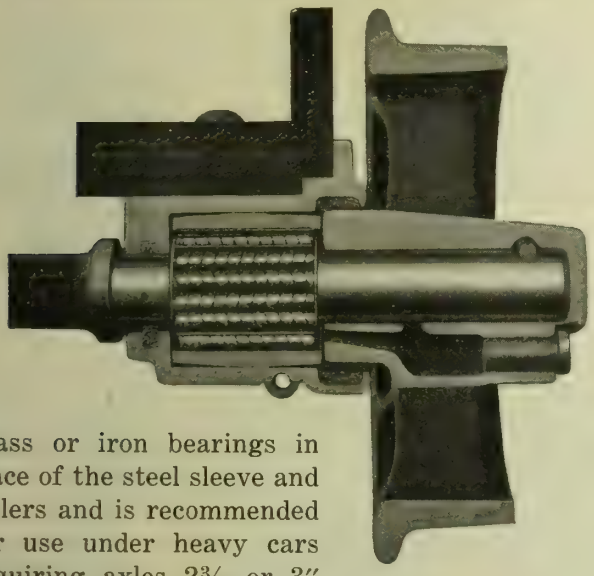
The Wheel in Place



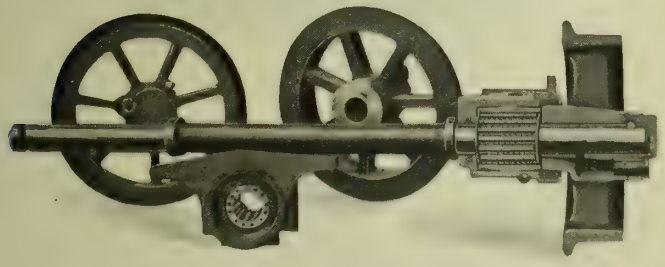
The Channel Iron Truck

The "Lobdell" Tight and Loose Wheel Hyatt Roller Bearing Equipment

The principle of the self-aligning bearing used on steam railroads has been incorporated into a strong compact design for mine cars. In taking the thrust from the rail against the flange, the wheel tends to "cant" on the axle, thus bringing undue pressure on the ends of the rollers when mounted in the hubs of the wheels. This uneven pressure upon the rollers will eventually cause them to wear unevenly. By mounting the Roller Bearings in the self-aligning steel sleeve in the pedestal box this fault, which is the root of most Roller Bearing trouble, is overcome. The accompanying photographs clearly show the design and operation of this equipment, which is also furnished with



brass or iron bearings in place of the steel sleeve and rollers and is recommended for use under heavy cars requiring axles 2¾ or 3″ diameter and over.



The Lobdell Tight and Loose Wheel Equipment

Mining Locomotive Wheels

Cast Iron Wheels, to meet the severe demand of Mine Locomotive service, require an especially hard and deep chill. As already mentioned, our long experience and especially constructed equipment enables us to guarantee our wheels to be unexcelled for this service.

Steel Tired Wheels are often preferred, on account of their increased tractive power and ease of repair, to the chilled iron wheels for this service. Our wheels of this type are of the best materials and the tires and centers are both machined accurately to standard gauges. We can furnish loose tires, properly bored for refitting on to the old centers of any of the wheels of this character we furnish.

Heat Treated Solid Steel Wheels have all the advantages of increased tractive power, flange strength, etc., that are found in the steel tired wheels, and are proving a very economical proposition as their first cost is much less.

We are thoroughly equipped with patterns for any of the above types of wheel for almost any



Wheels and Axles for Mine Motors

make of mining locomotive (Jeffrey, General Electric, Goodman, Baldwin-Westinghouse, Morgan-Gardner, etc.), and make a specialty of refitting such wheels on either old or new axles.

Chilled Iron Pump Plungers

Chilled iron pump plungers have a hard chilled surface, accurately ground and highly polished, which will positively not score. The packing on pumps equipped with our Chilled Iron Plungers has been known to last for several years and the saving in packing usually very soon pays for the cost of the plungers. These plungers can be furnished for any style pump now using grey iron or copper-jacketed plungers.



Chilled Iron Plungers

The Orenstein—Arthur Koppel Company

Plant, Koppel, Pa.

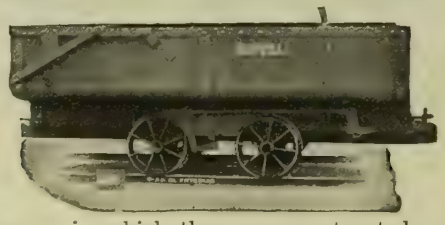
NEW YORK PITTSBURGH CHICAGO SAN FRANCISCO

Products.

Cars of all types for standard or narrow guage tracks, supplied from standard patterns or built to suit your specific requirements. Cast Steel Wheels, Steel Ties, Rails, Frogs, Switches, Switch Points, Portable Track, Turnouts, Fishplates, Railroad Spikes, Track Climbers, Approachers, Crossovers, Crossings, Turntables, Buckets, etc.

Koppel Steel Mine Cars

Koppel Steel and Composite Mine Cars afford largest possible capacity for given outside clearance, and lowest possible weight per unit of carrying capacity.



The manner in which they are constructed ensures unusual durability with great strength, practically eliminating repair expense and reducing maintenance cost to the minimum.

The bodies of these cars are absolutely rigid, preventing sagging of the sides under the load and thereby reducing friction at the rail to such an extent that the draw bar pull is decreased from 15 to 20 per cent. effecting a great saving of power and increasing the haulage capacity.

Koppel Steel Mine Cars are unaffected by accidents that would destroy wooden cars and under ordinary conditions of service will outlast several generations of wooden cars.

Compared with a wooden car of the same outside dimensions our cars have from 10 to 15 per cent. greater capacity while the maintenance cost is less than 40 per cent. of that of the wooden car.

Considering these advantages, Koppel Steel Mine Cars cost less in the long run than any wooden ccar.

Koppel Composite Cars.

These cars are of all steel construction with the exception of the floors, which are of oak so arranged that they can



be renewed easily and quickly when necessary. Both types of cars have numerous exclusive features. Write us for detailed descriptions.

Koppel Cast Steel Wheels

These wheels were designed by us to harmonize in durability withour steel cars, and have proved to be everything we expected of them. They are tough and hard, have a special arrangement for oiling and are tted with special bushings which can be easily renewed by the mine blacksmith when worn.



We are prepared, however, to furnish any type of running gear, or supply bodies to suit your own running gear.

Steel Mine Ties

In connection with the use of steel cars, a still further advantage is obtained by using steel ties under the rails,

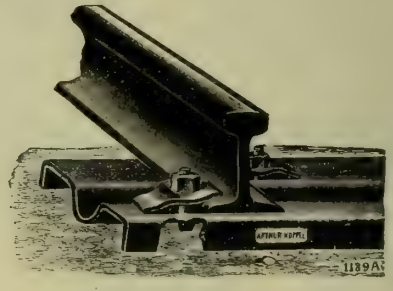


Fig. 5504.

becase on account of their height as compared with wood ties, they permit the use of higher cars for a given thickness of vein.

We provide different types of fastenings for these ties. The Koppel Ideal Ties provide a rail fastening which is specially adapted to hold the rail against outward pressure of the wheels. With this fastening the tie is not weakened by open holes and it can be quickly dismounted and set up. Ask for illustrations and full description.

If desired, ordinary clip and bolt fastenings, as per Fig. 5504 can be provided, and if mines are wet it is advisable to use American Ingot Iron for the ties to reduce the chances of corrosion.

Koppel Rails, Tracks, Turntables, Switch Points and Frogs

Rails from 12 to 70 pounds, switch points and frogs kept in stock ready for immediate shipment, also Cast Plate and Portable Track from 26 to 36″ guage, and Ball and Roller Bearing Turntables with or without wood tops, crossed or single track, capacity from 1½ to 3½ tons.

Phillips Mine & Mill Supply Co.

ESTABLISHED 1863.

Pittsburgh, Pa.

Mine and Coke Works Equipment

Agencies:

SEATTLE: A. F. Blair, C. & M. E.
SALT LAKE: Utah Eng. & Machy. Co.
LETHBRIDGE, CAN.: J. B. Turney & Co.
HUNTINGTON, W. VA.: Miller Supply Co.

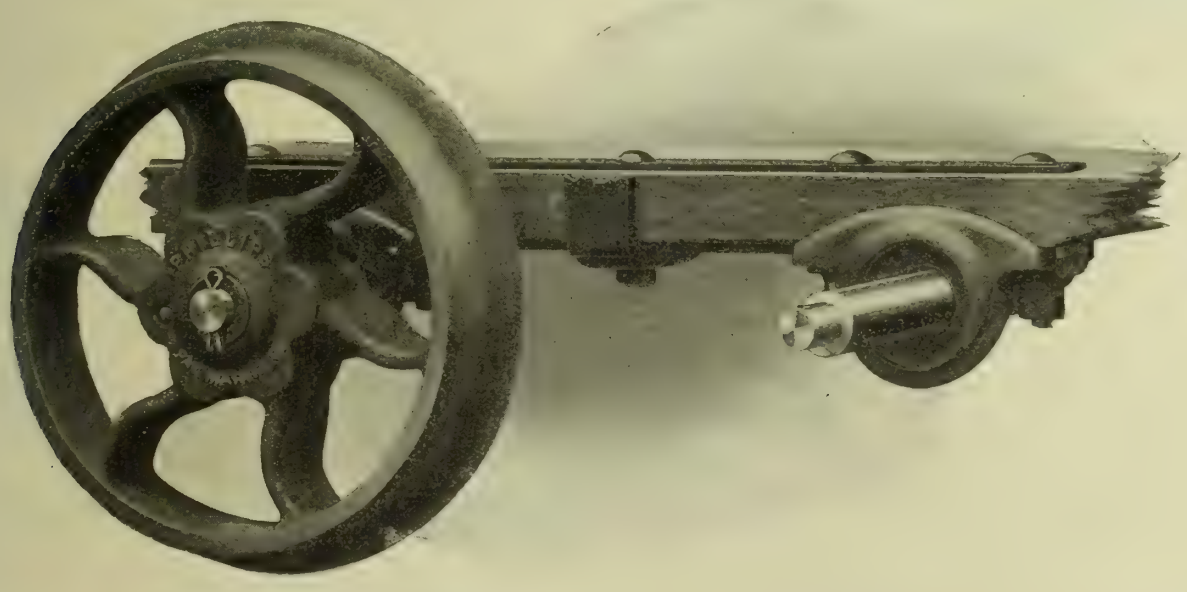
Products

Mine Cars, Mine Car Wheels and Trucks, Screens and Screening Equipments, Larry Wagons, Incline Drums, Car Hitchings, Frogs and Turnouts, Automatic Car Stops and Caging Machines, and the Phillips Automatic Cross-Over and Automatic Push-Back Car Dumps.

This Company was one of the first to engage in the manufacture of Mine Cars and Mine Car Wheels and Trucks, and our product has always kept pace with changing conditions in the mining industry. Some years ago, we conceived along entirely new and original lines the **Phillips Patent Open Cap Wheel Truck,** in which is combined the best features of the open end and the capped wheel. This Truck embodies a complete reversal of the usual practice in that the axle collar is **inside** the wheel where it runs continuously in oil. This collar maintains the wheels to guage and prevents sideways play of the axle, answering the same purpose as the projecting collar on the ordinary axle, and if a linch pin should be lost the axle cannot work through. The linch pin is always visible. Our system of connecting the felt-packed journal boxes with heavy steel straps, both over and under the car bottom, prevents the boxes from shifting on the bottom of the car, and the axles are always held in true alignment. When lubricated with grease, the wheels will run four to six months and even longer with one lubrication.

Due to placing the collar of the axle inside the wheel where it runs continuously in oil friction has been materially reduced, and the drawbar pull on cars equipped with these **Open Cap** Trucks is fully 25% less than on cars equipped with self-oiling wheels of the regulation type.

Internal wear has been practically eliminated, and while the Truck is guaranteed for only one year in this respect we would run no risk in offering a guarantee of 5 years or more, as even the first few experimental trucks of this type which we put out 8 years ago show no perceptible wear internally. Our wheels contain no scrap, being made of the very best of new metals mixed with charcoal iron and annealed in pits, so seldom break. We receive orders for very few repair parts, and operating costs for this Truck are suprisingly low.



It has been adopted exclusively at many of the largest operations in the country, and 2 concerns are each using well over 10,000 Trucks. Dozens of concerns have found it profitable to discard their old running gear in order to equip their cars exclusively with these Trucks on account of the economies they will effect.

In order to quote on or furnish these Trucks we should have a drawing of the car to which they are to be applied. They can be furnished in all the usual and desirable combinations, and we will be glad to furnish full particulars, drawings and prices on request.

PRESSED STEEL CAR COMPANY

Builders of

MINE AND RAILROAD CARS

General Offices

Farmers Bank Building
Pittsburgh, Pa.

Works

Pittsburgh, Pa., McKees Rocks, Pa.,
and Hegewisch, Ill.

Sales Offices

NEW YORK PITTSBURGH CHICAGO WASHINGTON, D. C.

Mine Cars

Steel Mine Cars

are becoming more popular every year with mine owners on account of their strength as compared with wooden cars, the greater capacity obtained within limiting dimensions and their lasting qualities.

A Less Number of Cars

are required to operate a mine of a given output, as fewer cars are out of service on account of repairs.

The Economical Operation

of mines is a point of vital importance to mine owners, and in spite of the fact that the first cost is somewhat greater the steel car is much less expensive in the long run.

The Pressed Steel Car Company's

experience in this line is of long standing, and the many thousands of mine cars turned out by them are, without exception, giving entire satisfaction.

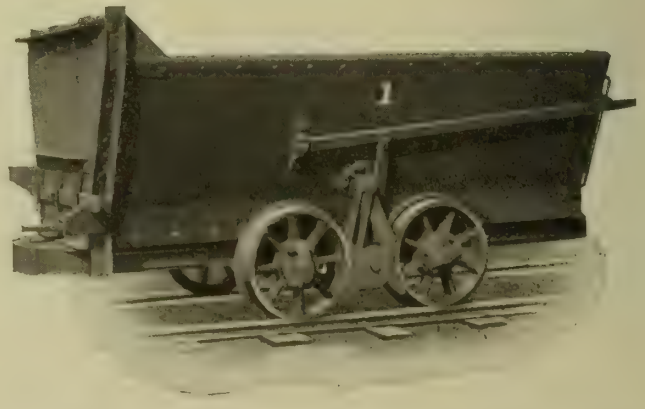
Special Attention

is called to the fact that this Company is in position to build Steel Mine Cars of any design or construction which may be desired. We are always glad to send our representative to go into the question of designs, or these can be prepared from blue prints showing the cars at present in operation, or upon receipt of detailed descriptions of the cars desired, including limiting dimensions, etc.

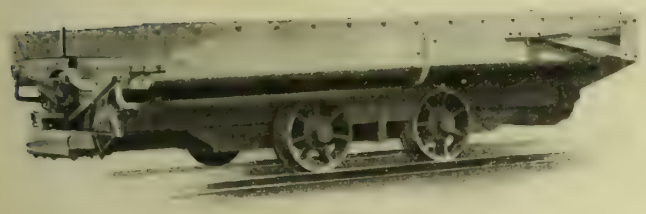
Attention is invited to the illustrations below and on the opposite page, which show a few of the various cars built by this Company recently.



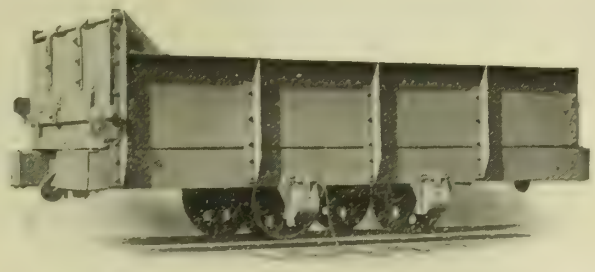
Steel Mine Car with wooden floor and spring drawbars, side sheets being composed of two plates either riveted or bolted together.



All Steel Mine Car, with continuous channel section underframing forming single center bumpers at each end. Equipped with all metal brake arrangement.



All Steel Mine Car with steel floor and removable wooden bumper cushions. This construction permits a very low car with large capacity.



All Steel Mine Car constructed of steel plates and rolled shapes arranged so that any damaged parts can be easily replaced at the mines. Equipped with waste packed journal boxes.



A Steel Car of the double or side bumper type, with wood floor. Equipped with an all-metal brake arrangement and self-oiling wheels. Wood Block Brake Shoes can be substituted for the all-metal brake shoes if desired.



Steel Mine Car with wooden floor of the pieced or bolted type, each side sheet being composed of three ¼″ steel plates bolted together in order to facilitate repairs.

Freight Cars

In addition to the manufacture of mine cars, The Pressed Steel Car Co. is one of the largest builders of freight and passenger cars in the world, being the first Company to engage in the manufacture of steel cars, and the long experience in this line of work, together with the experienced force of engineers and the large capacity of its plants, enables it to take care of the largest as well as the smallest consumer of either mine or railroad cars.



Self-Clearing Hopper Car.
Standard Type of Center Dumping Coal Car.
Capacity, 110,000 Pounds.



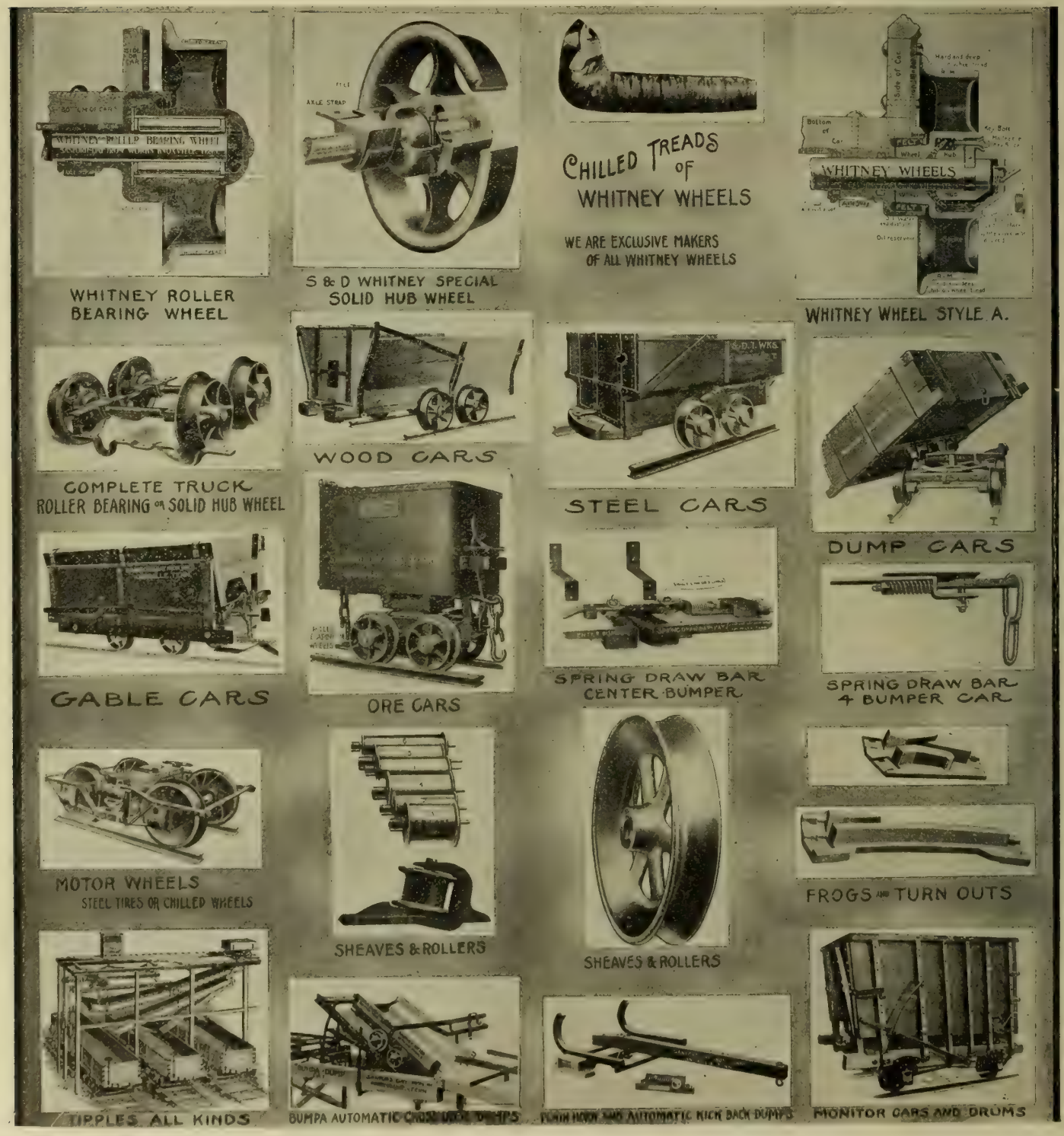
Quadruple Hopper Coke Car.
Combined Door Opening, 94 Sq. Feet.
Capacity, 110,000 Pounds.
Cubic Contents, 2,792 Cubic Feet.

Write for Special Circulars.

SANFORD-DAY IRON WORKS

Main Office and Factory: Knoxville, Tenn.

Branch Offices: Birmingham, Charleston,W. Va., Evansville, Pittsburgh, New York, Denver, Salt Lake City, Seattle.



Exclusive Makers of All "Whitney" Wheels.
Catalogue No. 25—5 sections, 150 pages, on request.

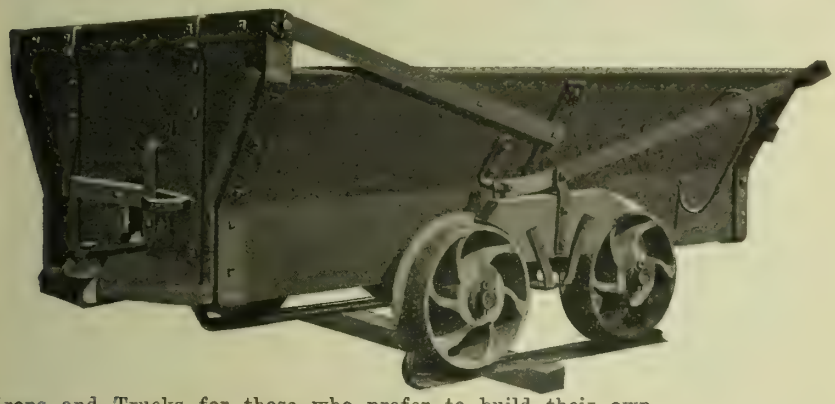
THE STAR MANUFACTURING CO.

New Lexington, Ohio

Manufacturers of Mine Cars, Wheels, Plain and Self Oiling and Roller Bearing, Axles, Irons and Trucks.

The Star Mine Cars.

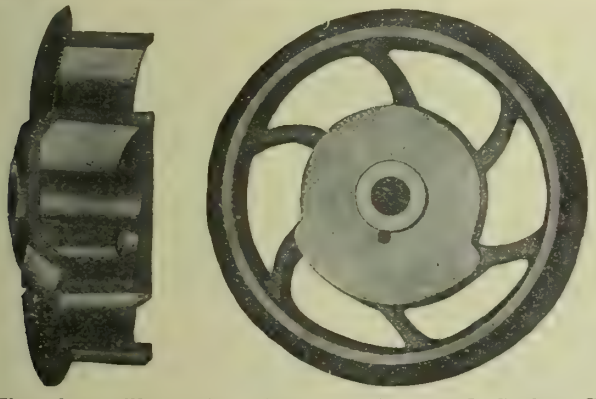
Built in size and style to suit your mine. All cars are built from specifications or blue prints. We also make up



Irons and Trucks for those who prefer to build their own cars at the mine.

Send us your specifications or blue prints for estimates.

The Improved Capless Star Mine Car Wheel.



The above illustration shows the Improved Capless Star Mine Car Wheel. Please note there is but one oil hole. This oil hole extends through a cone-like projection cast on the inside of the front wall. The cone shape of the projection catches the oil that is thrown against the wall and prevents it from running out at the oil hole.

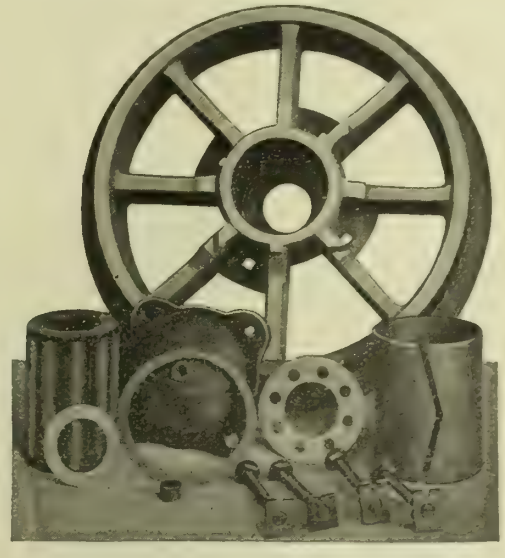
There are no plugs to be unscrewed for oiling, and which must be replaced in order to hold the chamber; neither are there any springs for holding a valve over the oil hole to keep the oil in the chamber. Plugs are liable to be left out, or to lose out, and springs are liable to break, and in either case the oil is lost and the wheel goes dry.

There is no packing to become glazed and filled with paraffine to stop the lubrication. In the hollow hub there is a pocket below the oil hole, and if the chamber is filled with oil, when the wheel is in position, with oil hole just below the spindle, to a level with the bottom of the hole, the level of the oil, when the wheel is turned half way round, will be just below the bottom of the spindle. This prevents leakage of oil around the spindle when the car is standing. No oil can escape except what is used in lubricating the spindle, and this is done by the passing from the chamber through holes in the hub as shown in the cut. One oiling will last for several weeks, depending upon the distance the car travels. On a test, a car was kept in continuous use for six weeks with one oiling, and at the end of the test there was oil sufficient for two more weeks, and no oil had been wasted from the oil hole.

This wheel is just what the cut shows. A plain wheel, with neither caps, bolts or gaskets, but a wheel that will hold oil and lubricate the spindle.

They are made 12, 14, 16 and 18 inches in diameter, and of weights to suit the service required of them.

Send us your specifications for a sample set, and prove their merits.



Our Roller Bearing Wheel and Parts.

Roller Bearing Wheel.

We also make Roller Bearing wheels, grease lubricated. The grease is forced into the chamber and around the rollers by a grease gun, which screws into the cap.

The cap is securely bolted to the face of the wheel with gasket to make it grease tight. The grease is held in back of the hub by a washer fitting into a recess of the hub; this allows sufficient grease to escape to lubricate the collar and prevent wear on the hub. The rollers work in a steel casing, which fits tightly in the hub.

We also make oil lubricated roller bearing wheels, using the same oiling device as in the plain wheel.

We are prepared to meet your requirements in any kind of truck, and will build your cars to suit the conditions of your mine.

Testimonials.

The Star Manufacturing Co., New Lexington, Ohio:

GENTLEMEN—Our mine superintendent reports that the truck equipped with your capless wheels is very satisfactory; he states that it is the easiest running car in the mine. We have not had any report from him as to the amount of oil used, but our impression is that it will use a great deal less oil than the wheels we have been using.

Yours very truly,
The Cambridge Collieries Company,
By W. R. POLLOCK, Assistant Superintendent.

The Cambridge Collieries Co., have in use over 4,000 of these wheels.

THE STEVENS COMPANY

First National Bank Building, Pittsburgh, Pa.

Engineers, Designers and Manufacturers

MODERN MINE EQUIPMEMT

Products

Mine Cars
Mine Car Wheels
Mine Car Hitchings
Stevens Solid Metal Plate and Box Trucks
Stevens Roller Bearing Axle Boxes
Stevens Screening and Loading System
Stevens Improved Mine Fans
Stevens Safety Cage Heads
Stevens Safety Self-Dumping Cages
Mine Car Greasing System
Monarch Mine Telephones
Engines, Boilers, Pumps, Rail, Rope etc., etc.

Modern Mine Cars

Designed to meet every requirement.

Built to withstand the most unfavorable conditions of mine haulage.

They appeal to you from an economical standpoint.

The Stevens Solid Metal Plate and Box Truck

A feature in construction of our cars is The Stevens Solid Flanged Plate and Box Truck. This Truck is a unit of strength. The flanged metal plate, together with the two middle binders, holds the cast-iron bearing boxes rigid, and at the same time, substantially unites the truck with the car body. The axles are thus held firmly in alignment and must run freely in the boxes. The draw bar is also bolted to this plate and the two binders, which insures the constant alignment of all irons in the bed of the car. Replacing boards or plates in the car, or cars leaving the track, can in no way disturb the accurate alignment of this truck.

Roller Bearings

Roller Bearing Mine Car Trucks are being generally adopted.

Roller Bearings should be **Durable** and **Economical** in operation. That depends upon how they are applied.

Roller Bearings in Axle Boxes are better than Roller Bearings in Wheels.

Roller Bearings in the Stevens Axle Box are the BEST.

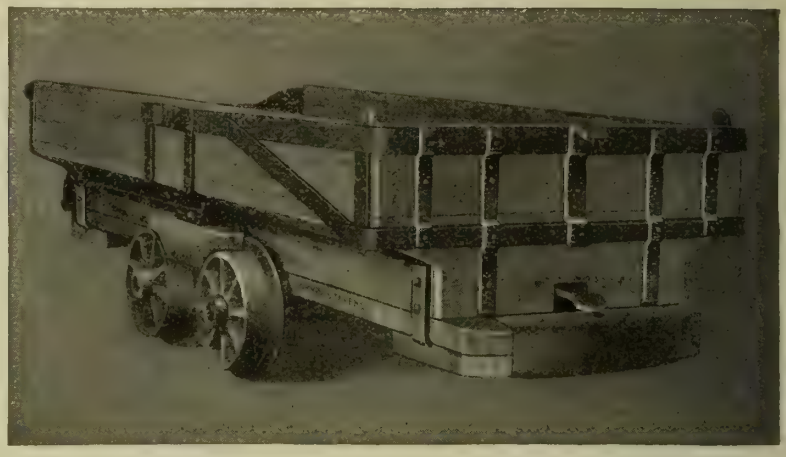
Ball Bearings

We are up-to-date and have in service for trial the Stevens Ball Bearing Axle Boxes with S. K. F. Self-Aligning Ball Bearings.

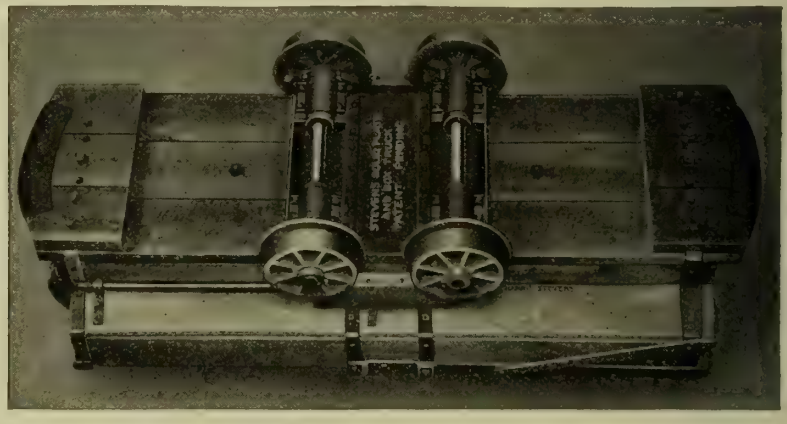
In operation since July, 1914, and with no other attention than the initial lubrication they are giving perfect satisfaction.

They do not seem to be affected by shocks or the hard usage of constant mine service. After eighteen months of such service we shall have more to say about them.

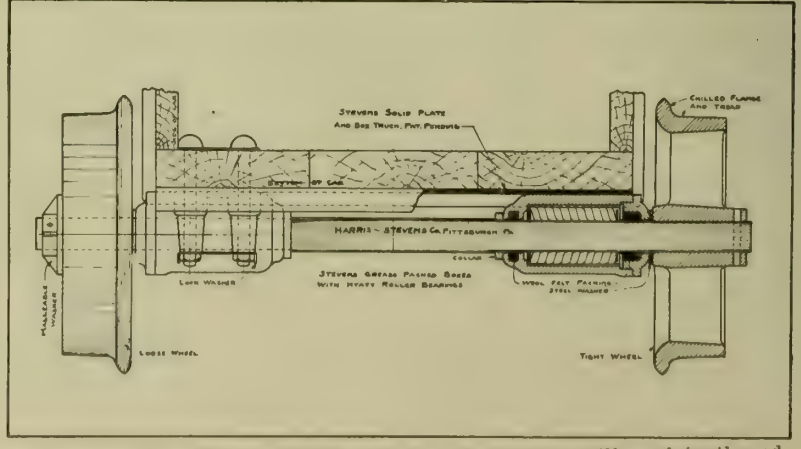
THE MOST DURABLE CARS ON THE MARKET



NOTE—Wooden Car—Center Bumper—Stevens Roller Bearing Axle Boxes—Hyatt Roller Bearings—One Tight and One Loose Wheel.



Equipped with the Stevens Solid Plate and Roller Bearing Box Truck. Round axle with one tight and one loose wheel. Center Bumper. Hyatt Roller Bearings.



The Drawing Explains the Principles briefly. We will explain the advantages in detail and without wasting your time if you'll simply ask us.

THE WATT MINING CAR WHEEL CO.

BARNESVILLE, OHIO, U. S. A.

Denver:
Lindrooth, Shubart & Co.,

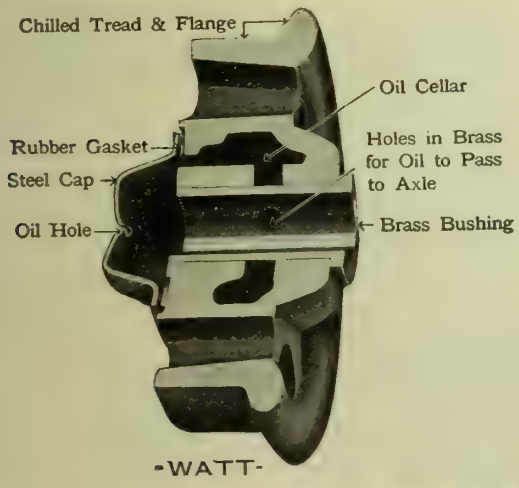
San Francisco:
N. D. Phelps, Sheldon Bldg.

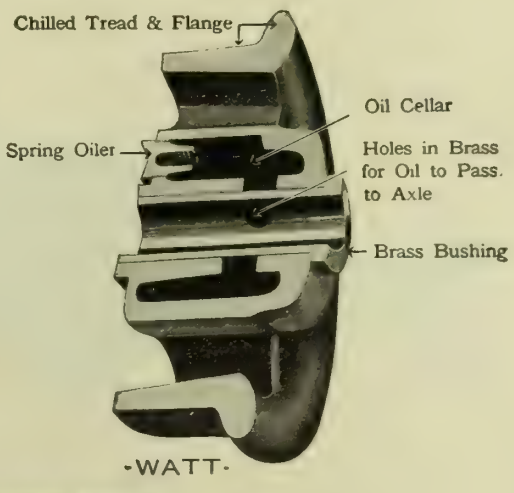
We Manufacture

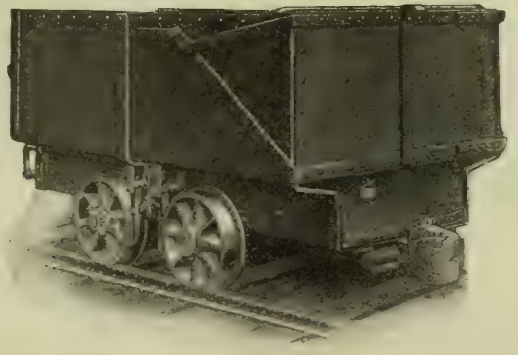
Mine Cars, Steel and Wood; Ore Cars; Quarry, Contractors' and Industrial Cars; Skips; Ore Buckets; Car Wheels and Trucks Complete

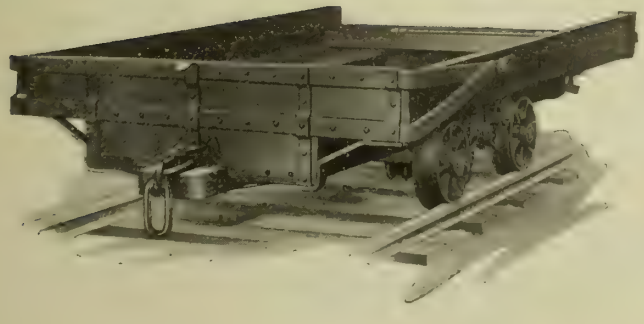
Just Out

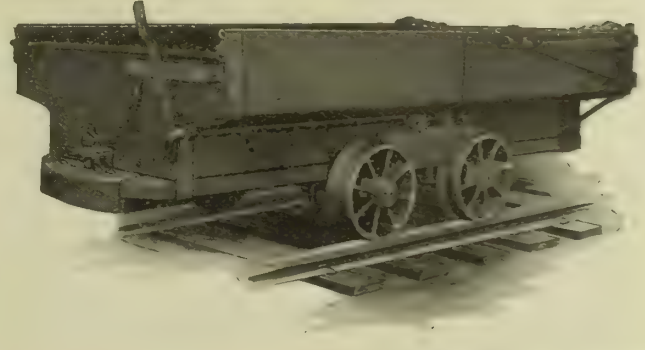
A new booklet on Watt Brass Bushed Wheels "Your time" we know is valuable, and for that reason we have prepared this booklet in such a manner, as it will take you but a few minutes to get the idea. And when writing, ask us to send our general catalog, which shows all types of mine cars. The many illustrations shown in it will be of great interest to you.







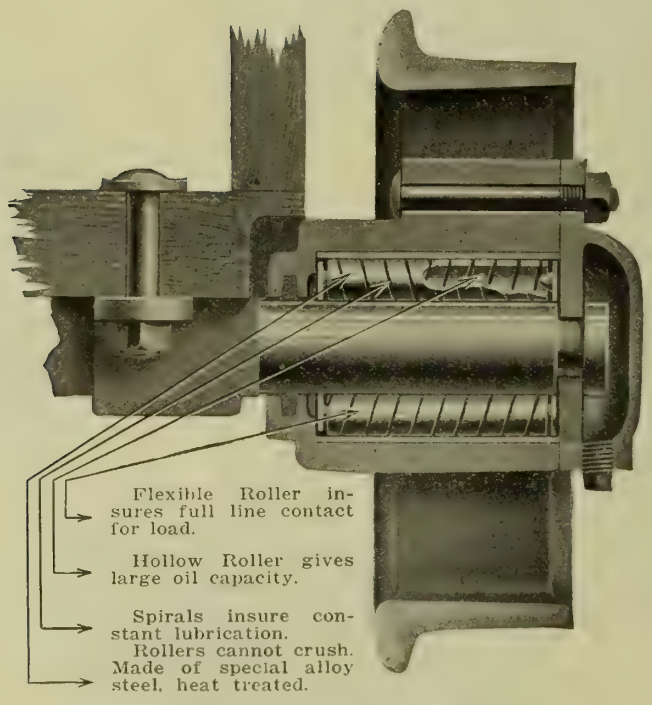




HYATT ROLLER BEARING CO.

NEWARK, N. J.

The Mark of the Bearing of the Highest Practical Efficiency.



The Hyatt Roller Bearing has all the features of other anti-friction bearings and more—the Hollow Flexible Roller. This exclusive feature means less attention for oiling, because the big Hollow Roller acts as an oil reservoir and the right and left hand spirals carry oil to every part; reduced wear, because the Flexibility insures full line contact and absorbs shocks; self cleaning, in that particles of dirt pass through the spiral slot into the centre of the roller.

These inherent features make it the logical and practical bearing for mine cars; make it the Bearing of the Highest Practical Efficiency.

Bulletins sent upon request to those who are sincerely interested in reducing their haulage costs.

GRAHAM NUT COMPANY

Established 1874 Incorporated 1903

General Offices
PITTSBURGH, PA.

Works
NEVILLE ISLAND, PA

GRAHAM PITTSBURG

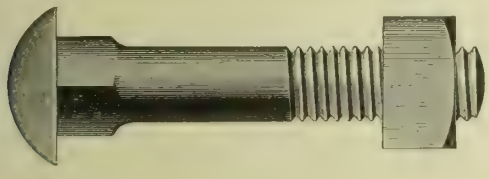
Manufacturers of

GRAHAM PITTSBURG

Bolts, Nuts, Rivets and Washers

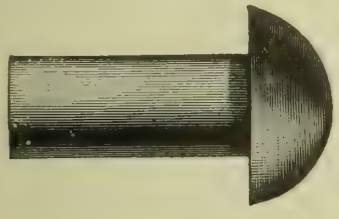
Products

Pit Car Bolts, Carriage Bolts, **Machine Bolts,** Track Bolts, Foundation Bolts, Rods, Lag Screws, Hot Pressed and Cold Punched Nuts, Washers, Rivets, **Special Collars for Mine Car Axles.**



Pit Car and Carriage Bolts

We are prepared to furnish promptly Pit Car and Carriage Bolts.

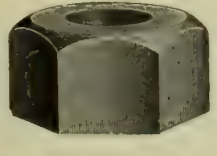


Rivets

We are prepared to furnish high grade Boiler and Structural Rivets ½″ diameter and larger, the same care being maintained in their manufacture, as with all our products, insuring a quality unsurpassed.

Special Collars for Mine Car Axles

We make a specialty of light and heavy collars for shrinking on Mine Car Axles. Standard sized carried in stock. Special sizes to order.



Nuts

Nuts in all sizes from ¼″ to 4″ diameter carried in stock in both hot pressed and cold punched.

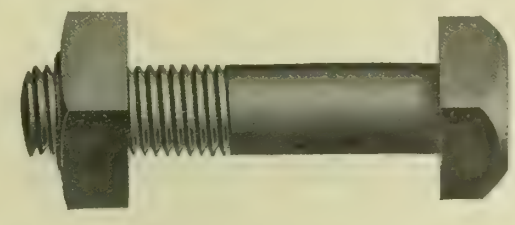
Directions for Ordering Bolts

Give style wanted and note following rules for measurement.

All Square, Hexagon, Button, Round, Cone, Round Head with Square Neck, Square Head with Square Neck are measured from under Head to Point.

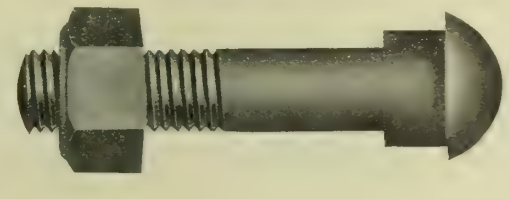
All Plow Bolts, Bolt Ends, Countershank Head Bolts and Rods are measured from end to end over all.

All Pit Car, Common Carriage and Machine Bolts, whether cut or rolled, are threaded U. S. standard. Other bolts follow special standards fixed by long usage.



Machine Bolts

We carry in stock all sizes of Machine Bolts from ¼″ to 1¼″ diameter up to 30″ in length, and are prepared to make larger sizes to order.



Track Bolts

Fitted with Square and Hexagon Nuts.

Standard sizes carried in stock.

Our line includes practically everything in bolts and nuts called for by the trade. In addition we are always prepared to furnish a great variety of special bolts and nuts.

We claim for our various products, a quality and finish superior to many and second to none.

Our equipment comprises machinery of the highest type produced by the leading machinery manufacturers, as well as much special machinery of our own design and is up to the minute in every detail.

Complete catalogue upon request.

THE ATLANTIC REFINING COMPANY

Largest Manufacturers of

Lubricating Oils & Greases in the World

Philadelphia Pittsburgh

Matchless Grease

A high grade product, unsurpassed as a lubricant where mechanical conditions prohibit the use of Oil. Recommended for use in spring or compression cups or in open boxes, as well as for crank pins, cross heads, valve motions, shafting, friction clutches, eccentrics, etc. Especially adapted to overcome heat conditions. Made in different consistencies to meet all requirements.

Artic Cup Grease

A lubricant adapted for general use on crank pins, shafting, loose pulleys, valve motions, eccentrics, slides, main journals, etc.

Made in different consistencies to meet all requirements.

Atlantic Graphite Grease

It possesses wonderful cooling as well as lubricating properties. Will work in bearing exposed to dampness and will not wash off. It is used to quite an extent for lubricating journals on street cars. Made in different consistencies to meet all requirements.

Atlantic Plunger Pole Grease

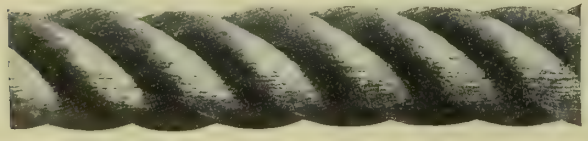
Carefully prepared for proper lubrication of pump plungers. Has sufficient adhesiveness to stick to surface of plunger without danger of pulling out the packing.

Atreco Plunger Pole Grease

A graphite plunger pole grease. It has the additional advantage of graphite as a water-resisting agent.

Atlantic Rope Grease.

Recommended for the lubrication of hemp rope cables.



Reliable Cable Coating

The standard of cable coatings. Highly recommended on account of its penetrating features, thus supplying the strands of the cable with proper lubrication and desired preservative. Contains no free acid.

No. 2 Liquid Cable Coating

A semi-liquid product, especially adapted for the lubrication of wire cables. Contains no free acid and is without an equal either as a lubricant or a preservative.



Eureka Grease for Mine Cars

WHAT IT IS.

A Lubricant for all types of mine car wheels ,adapted for the use of grease—especially the cavity type with push button bolt closing oil hole.

A Lubricant of one density meeting climatic temperatures the year around.

A Lubricant that can be readily applied with a grease gun.

A Lubricant made for efficient service.

A Lubricant that solves the problem of Mine Car Lubrication.

WHAT IT DOES.

Lubricates the Mine Car Wheels from three to six months on one application of grease.

Elliminates the wages of car oiler. No attention necessary after grease has been applid. No Waste.

Reduces friction to a minimum.

Flows to axle without friction heat.

Elliminates loss from leakage as often occurs from the use of oil.

Reduces the cost of your Mine Car Lubrication.

CITIZENS COAL COMPANY
Miners and Shippers of
BITUMINOUS COAL
House Coal a Specialty.
General Office, Franklin Building—Telephone 1078.
Johnstown, Pa., Jan. 15th, 1914.

Atlantic Refining Co.,
Pittsburgh, Pa.

Gentlemen:—

The Eureka Grease for Mine Cars we have purchased from you has been giving very good results and is the best we have ever used for Roller Bearing Cars. It gives us great pleasure to recommend this grease to the general public.

Yours very truly.
Citizens Coal Company,
(Signed) John K. Bole, Sup't.

CARNEGIE COAL COMPANY
Producers of
PITTSBURGH-YOUGHIOGHENY COAL.
Pittsburgh, Pa.
Charleroi, Pa., July 16th, 1914.

Atlantic Refining Co.,
Pittsburgh, Pa.

Gentlemen:

Sometime ago your Mr. Kerr desired to know whether the Eureka Grease for mine cars purchased from your Company was giving satisfaction. Would state, without hesitation, that it is superior to any other mine car lubricant with which I have had any experience. When first recommended, like all other new propositions, I preferred that others try the experiment; however, our General Superintendent, Geo. F. Osler, having had previous experience with the grease as a lubricant, requested that I give it a trial, which I did, and I herewith give a brief report of the results.

October 15th, 1913, we injected into each wheel of 65 mine cars approximately one quart of Eureka Cup Grease. Then about March 1st, 1914, we gave them another "dose" similar to first one. From observation most of the cars could have continued for a much longer period. In the meantime, we received several hundred cars, and gave them the same treatment. July 1st, all our cars were packed with the cup grease. Judging from past results they will require no further attention until the latter part of September. In conection with the perfections of this grease as a lubricant, we do not need to employ a steady greaser.

Situated in the Borough of Charleroi, we are restricted from allowing any refuse to fall from our tipple to the street pavement, therefore, the use of Eureka Cup Grease eliminates all trouble along this line.

In conclusion I am ready to substantiate any of the above mentioned merits of Eureka Cup Grease.

Very truly yours,
(Signed) S. W. HALL,
Superintendent.



Eureka Grease (for Mine Cars) is sold in barrels and half-barrels and can be obtained from any of our Main Stations.

Miners Sunshine Wax

All Miners Oils make light but throw more or less smoke and fumes.

Smoke is injurious to health.

Miners Sunshine produces about twice as much light as either Lard or Cottonseed Oils.



The Miners problem is:—How to get the most light with the least smoke.

Miners Sunshine gives the light of all mine illuminants. There is practically no smoke.

Miners Sunshine can be used in the closest workings.

NEW YORK & NEW JERSEY LUBRICANT CO.

Originators and Sole Manufacturers

TRADE MARK REGISTERED IN
NON-FLUID OIL
UNITED STATES PATENT OFFICE

165 Broadway New York

Products

Non-Fluid Oil—produced in over forty densities, including grades exactly suited to every lubricating condition that is presented in the operation of coal mining and handling machinery.

Motorol—For lubricating cylinders of gas engines.

Non-Fluid Mine Car Oil
Medium Grade for Plain Cavity Type Wheels

Is of such consistency that it will feed properly from the oil chamber to the axle under all service conditions. This guards against the excessive friction-load and destructive wear that occur when using car oils, which congeal in winter, or car wheel greases, for these cannot start to lubricate until the heat of the bearing renders them soft enough to flow from the reservoir. On the other hand, Non-Fluid Mine Car Oil is not so light that it will escape from the bearings, and only sufffficient lubricant feeds from the reservoir to replace that which is actually worn out. The agitation of the lubricant, caused by the jerking and jarring of the cars in running over rail joints and in taking up slack in the car couplings, facilitates this feeding process. The waste in using car oil is very great, particularly during hot weather, as it pours in a continuous stream from the reservoir to the axle, and is literally "pumped" from the bearing, because of the lost motion between the wheel and the axle.

Non-Fluid Mine Car Oil
Heavy Grade for Roller Bearing Type Wheels

Uniformly maintains a consistency about equal to that of warm vaseline, and can be depended on to keep all the rubbing parts coated with a lubricant film that minimizes frictional resistance and promotes the efficiency of roller bearings in their function of reducing power consumption. Fluid oils fail to render this service, because of their tendency to flow away from frictional points. This fault is aggravated as the bearings warm up, for then the oil is rapidly vaporized and actual metal-to-metal contact takes place over large areas of the bearing surface, resulting in an abnormally high friction-load and rapid wear of the bearings. The constant escaping of oil from the bearings also makes it very wasteful, and necessitates frequent recharging of the oil chamber.

The use of ordinary grease in Roller Bearings should be avoided because, as is well known, grease must be brought to a mobile consistency by the heat of the bearing before it can lubricate at all. Since this necessitates an increase in the friction load, it follows that grease in a measure defeats the very object for which roller bearings are installed and is therefore unsuitable for their lubrication. So-called "semi-fluid" or "semi-solid" greases as a rule liquefy in use, and waste as freely as oils, while failing to provide relief from the drawbacks of ordinary grease.

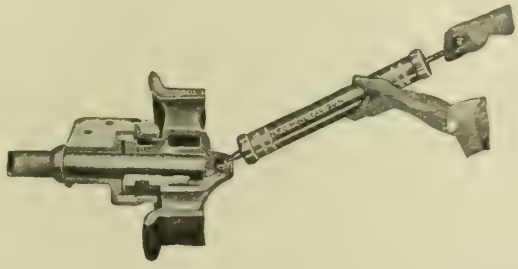
Non-Fluid Mine Car oil is a strictly neutral lubricant and will preserve the finely finished surfaces of the rollers, guarding against the corrosion and pitting that generally occur when ordinary greases are employed, due to the presence of free acid in the lubricant.

If an even heavier density is preferred, Grade No. 120 is recommended. For **car wheels equipped with Hyatt Roller Bearings** the **light** grade is generally most suitable, although the construction of some makes of wheels, equipped with these bearings, will permit the use of the heavier grades.

When using Non-Fluid Mine Car Oils, all wheels should be fitted with oil plugs.

N. F. O. Mine Car Gun

This gun is designed especially for applying Non-Fluid Mine Car Oils, and will handle all grades



with ease, without the removal of spout, making it possible to pack car wheels quickly and without waste of lubricant.

It is of very substantial steel construction and will stand the roughest use. The barrel is 18½" x 2½" and the spot of gun tapers, so that it will fit any oil-hole.

Other Grades of Non-Fluid Oil
are of equally high efficiency for the lubrication of air compressors, box car loaders, car hauls, dynamos, engines, fans, gears, loading booms, mine locomotives, motors, picking tables, pumps, retarding conveyors, revolving dumps, shaker screens, sheaves, wire cables, etc.

Non-Fluid Oil definitely reduces the friction-load of machinery as compared with ordinary grease, and permits the utilization in useful work of a large percentage of power that is generally wasted.

Non-Fluid Oil outlasts the best fluid oils and greases three to five times, reducing the cost of lubrication and the labor and loss of time in oiling.

Non-Fluid Oil does not vary in consistency with changes of temperature, so can be depended on to lubricate efficiently under all service conditions.

Liberal testing samples will be furnished free, upon request.

The results of our thorough research into the lubrication of coal mining machinery, have been embodied in our Bulletin 26A. Write for free copy.

PITTSBURGH KNIFE AND FORGE CO.

MANUFACTURERS OF

HARRIS MINE CAR HITCHINGS, MINE FORGINGS, ETC.

Successors to
PITTSBURGH STEEL MFG. CO. and WM. HARRIS & SON CO.

ESTABLISHED 1876.

Office and Works, 709 Belmont St., North Side.

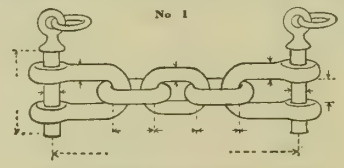
PITTSBURGH, PA.

Products

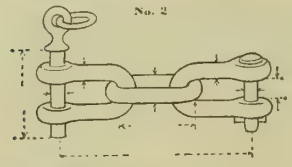
Mine Car Hitchings, Mine Forgings, Puncher Picks, Mining Machine Bits, and Bit Steel.

Harris Hitchings

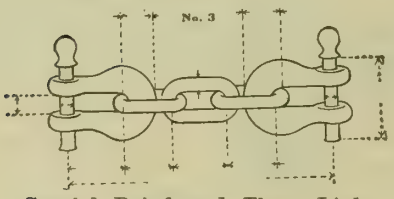
It is a demonstrated fact that the really successful hitchings bear the name of Harris. They are made of **double refined iron and are hand welded.**



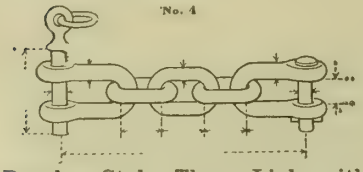
Regular Style Three Links.



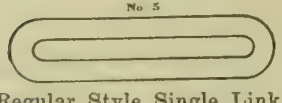
Regular Style One Link.



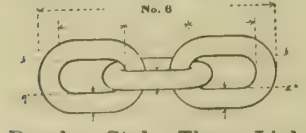
Special Reinforced Three Link Hitching



Regular Style Three Link with Ring and Button Head Pins.

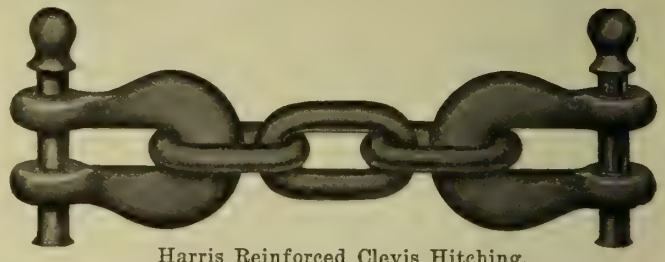


Regular Style Single Link.



Regular Style Three Link (No Clevis).

You will never realize just what trouble and annoyance you are putting up with in taking care of broken couplings on your mine cars until you have used Harris Hitchings.


Harris Reinforced Clevis Hitching.

Harris Reinforced Clevis Hitchings

The illustration shows the most dependable coupling made. It is impossible to get the clevis out of the links as it will not spread or open. This means that Harris Hitchings wear better and last longer than ordinary hitchings, in fact economy and Harris Hitchings mean the same thing.

The Harris Reinforced Clevis Hitchings are also made with either plain pins, ring pins, chain pins or button head pins. Pins are made tight or loose as the customer desires.

Bits


Chisel Bit.
½x¾x4 ½x⅞x4 ½x1x4


Special Chisel Bit.
Made all sizes.

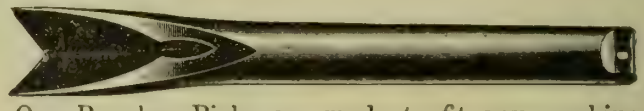

Pick Point Bit.


Bit Steel.
Cut to any length.

Mining Machine Bits made to fit any machine. They are made of the best Crucible Steel, tempered and drawn to suit any district either pick or chisel-point. They are guaranteed to do more work and cut more coal than any bit on the market.

Our special Bit Steel can be had in any size and cut to any length.

Puncher Picks



Our Puncher Picks are made to fit any machine. They are also tempered and drawn which makes them hard and tough. They will cut in any district and may be had at prices which are right. They are guaranteed to do your work. Send us a trial order.



Quality—Service—Reasonable prices.



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FEB 5 - 1921

SHOP SECTION

The following manufacturers of shop equipment have catalogue descriptions in this section:

Borden Co.
Buffalo Foundry & Machine Co.
Mayer Bros. Co.
Toledo Pipe Threading Machine Co.

For additional descriptions of Shop Equipment not appearing in this sectfon, refer to Index of Products in front of book.

THE BORDEN COMPANY

Warren, Ohio, U. S. A.

Pipe Cutters



Die Stocks



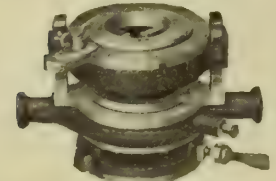
No. 6 (¼—¾ in.) Beaverette
Cuts all sizes without changing dies. A sturdy little tool that's always ready. List $15.00. Extra dies, per set, $3.00.



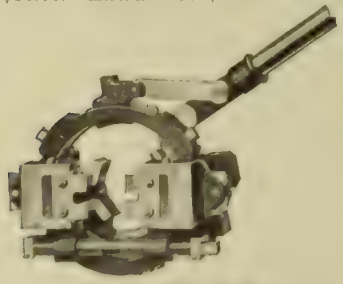
No. 210 (½—1¼) Cross-Bar
An Easy Working Receding Die Stock without loose parts. As strong as a solid die, but easiest to operate. List $20.00. Extra dies $5.00.



No. 25 (1—2 in.) Beaver
Cuts all sizes without changing dies. The original Beaver Die Stock. No loose bushing or dies. Will outwear cheaper tools. List $30.00. Extra dies $3.50.

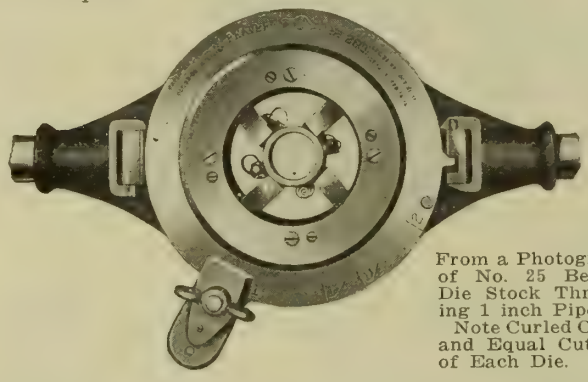


No. 26 (1—2 in.) Ratchet
Like the No. 25 except operates with ratchet. Preferred for mining operation and work in confined positions. No loose parts. List $35.00. Extra dies $3.50.



No. 10, 2½—4 in.

One man threads any size—8 inch included. They save in labor. They save in time. They save in weight. They save in repairs.



From a Photograph of No. 25 Beaver Die Stock Threading 1 inch Pipe.
Note Curled Chips and Equal Cutting of Each Die.

The Beaver principle revolutionizes all pre-conceived ideas of threading pipe—The further you cut the thread the easier the labor.

Beaver Easy Working Die Stocks not only thread pipe easily but they save the annoyance of changing dies. Beavers cut all sizes of pipe equally well; the construction takes care of this.

All Beaver Die Stocks are "Easy Workers" because they use a thin die expanding automatically to cut the tapered thread.

The large sizes include a gear, covered to protect from dirt, and are bronze bushed and made interchangeable.

A feature of the Beaver Die Stock is the low cost of upkeep. Repairs when required always fit and the total cost of all parts added together equal the cost of the tool.

Beavers are the Standard in most mines.

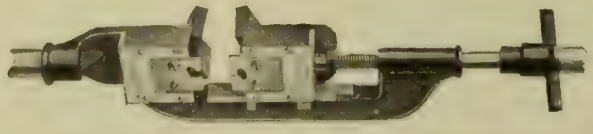
Complete catalog and discount on application.

Beaver Square-End Pipe Cutters

The knives are formed like a carpenter's plane, with a guide ahead to limit the cut and protect the cutting edge. The knives are backed up by powerful springs (tested to 10,000 compressions) which hold the knives to their work until the pipe falls off clean—without a burr.

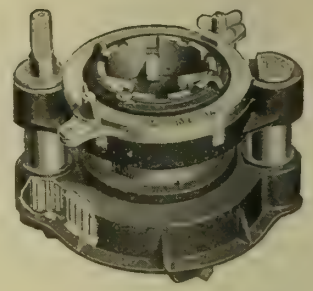


Cutting Knives.



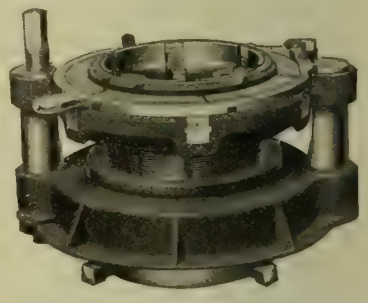
Nos. 1 and 5 Beaver Square-End Pipe Cutters.

Number	1	5	10
Cuts Pipe	⅛—1″	½—2″	2½—4″
List price	18.00	20.00	90.00
Extra knives	1.20	1.30	2.50



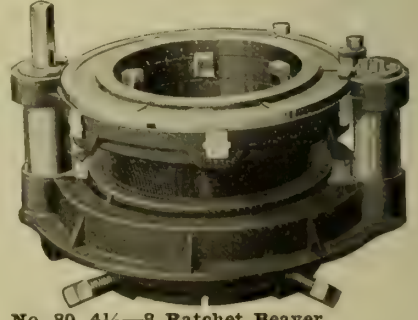
No. 41, 2½—4 Ratchet Beaver

A light, strong tool, cutting all sizes 2½, 3, 3½ and 4 without changing dies. Particularly adapted to mine work. A husky boy can cut 4 inch alone. List $40.00. Extra dies $9.00.



No. 61, 2½—6 Ratchet Beaver

We claim more of these tools are sold than all other 6 inch hand machines combined. Two sets of dies are used to cut the unusually large range. All steel construction and guaranteed to outwear cheaper tools. List $220.00. Extra dies per set $14.00.



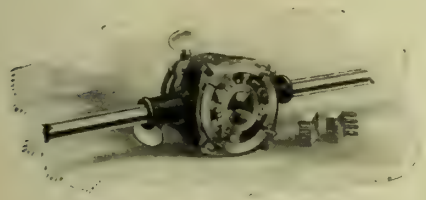
No. 80, 4½—8 Ratchet Beaver
We guarantee one man can cut 8 inch pipe. Built like other large Beavers of steel for service. 2 sets of dies are used, light enough to be easily portable. List $300.00. Extra dies set $20.00.

The Toledo Pipe Threading Machine Co.

Manufacturers of

TOLEDO HAND OPERATED PIPE THREADERS

Toledo, Ohio — New York Office 1182 Broadway



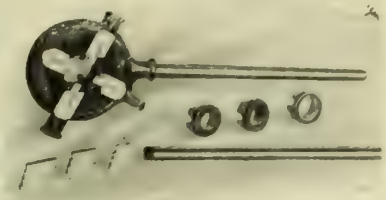
Toledo No. 0—A Compact, Handy Little ⅛" to ¾" Threader
List Price $16.00



Toledo No. 1—The Standard 1" to 2" Pipe Threader
List Price $24.00



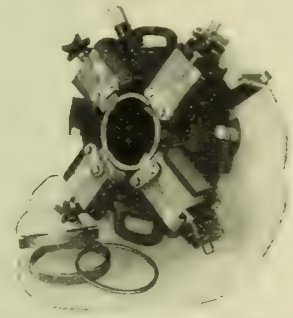
"Toledos" Threading Pipe in the Catskill Aqueduct, New York City



Toledo No. 1-A—A Ratchet 1" to 2" Tool for Close Quarters
List Price $30.00



Vosper Pipe Cutter—Cuts Off ⅛" to 2" Pipe Without Burrs
List Price $16.00



Toledo No. 250 Pipe Cutter An Excellent 2½" to 6" Cutter Operates With a Ratchet
List Price $80.00



Toledo No. 2—A Portable 2½" to 4" One-Man Threader, Utilizing a Ratchet
List Price $100.00

"Toledo" Pipe Threaders

A line of hand operated pipe threading tools that enable one man to easily thread any size of pipe from ⅛" to 12", anywhere.

"Toledos" cut threads with a long, constant taper—a positive guarantee against leaks. Every one of the 12 different models are light and compact, strong and durable, and thread pipe with unbelievable ease to those unfamiliar with "Toledos".

One hundred and fifty thousand are in use today—thousands being used in mining operations.

Pipe Cutters

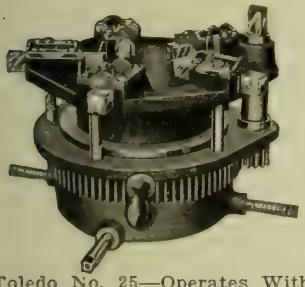
Both the "Vosper" and the "No. 250", here shown, cut off pipe straight and true, leaving no burrs. A big factor in getting tight joints.

Pipe Vises

"Toledo" Pipe Vises hold tight, without crushing, any shape fitting, valve or pipe that will go inside the jaws. The No. 1 has a capacity of ⅛" to 2½"; the No. 2 a capacity of ⅛" to 4½".

Vise Mounts

"Toledo" Vise Mounts and Roller Supports are an excellent, portable, collapsible substitute for the heavy, cumbersome work bench. Made in three sizes.

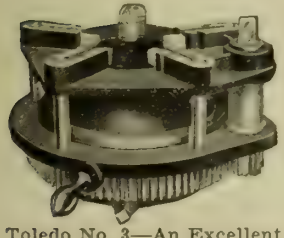


Toledo No. 25—Operates With a Ratchet, and Threads 2½" to 6" With One Set of Dies
List Price $230.00

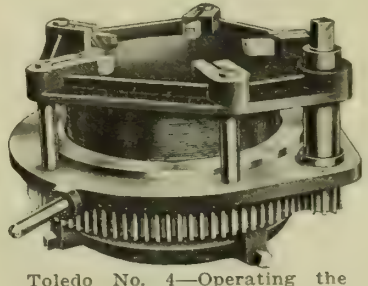


Toledo Pipe Vises Hold Any Shape Fitting or Valve

Write for Complete Catalogue "K".



Toledo No. 3—An Excellent Ratchet Tool, Cutting 4½" to 8" Threads
List Price $300.00



Toledo No. 4—Operating the Ratchet, One Man Threads 9" to 12" Pipe With This Tool
List Price $500.00



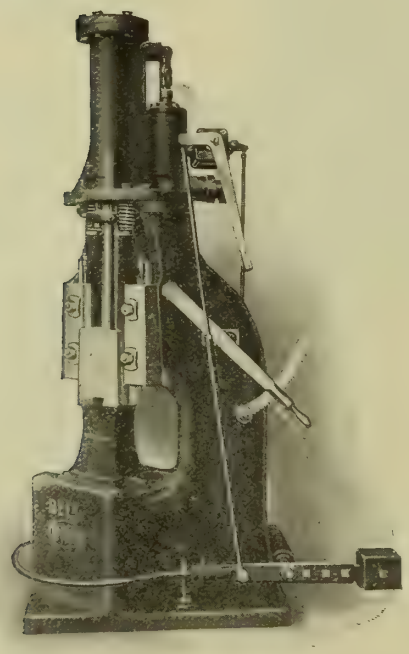
Toledo Vise Mount and Roller Support—An Excellent Portable, Collapsible Work Bench

Buffalo Foundry and Machine Co.

13 Winchester Avenue BUFFALO. N. Y.

"Bell Steam Hammers"

A Steam Hammer pays for itself through improved quality and increased quantity of work where even a single blacksmith fire is operated.



Steel Frame Guide Type.

Built with 100 lb. to 600 lb. falling weights.

Suitable for the lighter classes of general blacksmith and special work. These hammers combine the essential feature of die alignment of the double frame steam drop type with the flexibility of the ordinary type of steam hammer, and can be operated automatically by foot treadle by blacksmith without the service of a helper. They are self-contained and require minimum foundation.



Single Frame Guide Type.

Built with 850 lb. to 5,000 lb. falling weights.

Suitable for the heaviest class of work. Special designs for special work. These hammers have exclusive features of re-inforced guide and stiffened column construction, automatic drainage of water or condensation from bottom of cylinder, unbreakable die-block design and removable cam plate. This combination with other features insures a long life of usefulness at maximum service at the lowest cost for operation and maintenance.

The "Bell" line of Hammers also includes hammers of other types and sizes and covers the complete range of blacksmith and forge work.

Write for New Catalog of "Bell' Hammers.

MAYER BROTHERS COMPANY

MANKATO, MINN.

Little Giant Power Hammer

The New Little Giant Power Hammer

will save from one to six men according to the purpose used.

It will pay for itself, and continue to REPAY for itself.

Made in three sizes: 25 lb., 50 lb., 100 lb.

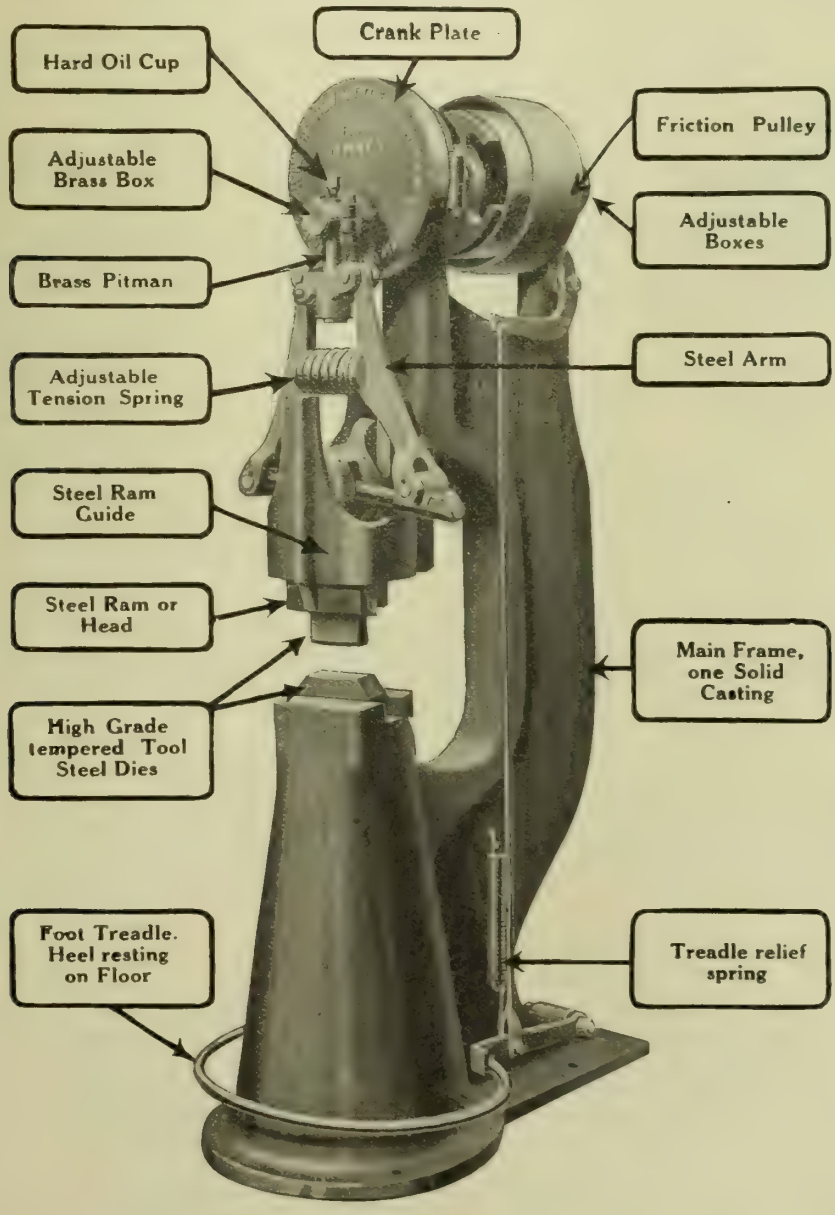
Driven by any kind of power.

Equipped with Electric Motor, direct connected if desired.

Endorsed and used by over 5000 operators all over the world.

Some Prominent Users

United States Government.
Standard Oil Company.
I. H. C. of America.
J. I. Case Plow Works.
American Motor Car Co.
Kansas State University.
State Agricultural College of N. D.
Delaware, Lackawana & West. Ry.
University of Minnesota.
Union Saw Company.
Monon. Coal Company.
Stephanville Plow Co.





SECOND HAND MACHINERY SECTION

The following dealers have catalogue descriptions in this section:

Glow Electric Co.
Miller-Owen Electric Co., Inc.
Moore, Edgar M., Co.
Pittsburgh Machinery & Equipment Co.

For additional descriptions of Second Hand Machinery, not appearing in this section, refer to Index of Products in front of book.

THE GLOW ELECTRIC CO.

Dealers in

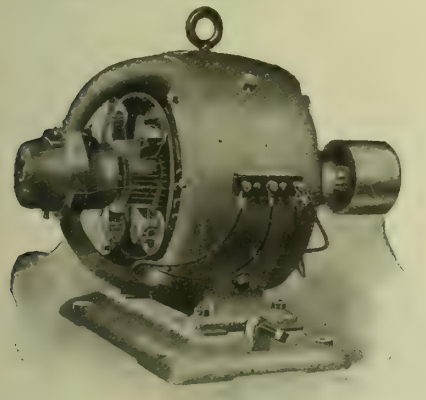
Rebuilt Motors, Generators, Fans, Motor Generator Sets, Arc Lamps, Switchboards and Everything Electrical

219-21-23 Walnut St., Cincinnati, Ohio

Long Distance Phone, Main 1795

Motors and Generators

Economy is a big word in business. It is the important step between success and failure. But there is a difference between buying a cheap article and making an economical purchase. A new motor or generator of an inferior make may be cheap, but a rebuilt machine of a standard make, guaranteed by us for a year and sold at from 20 to 50 per cent. of the original price, is a purchase representing real economy.

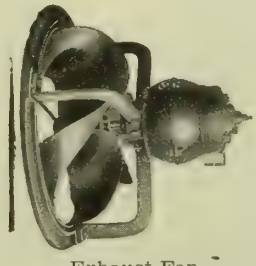


D. C. Motor.

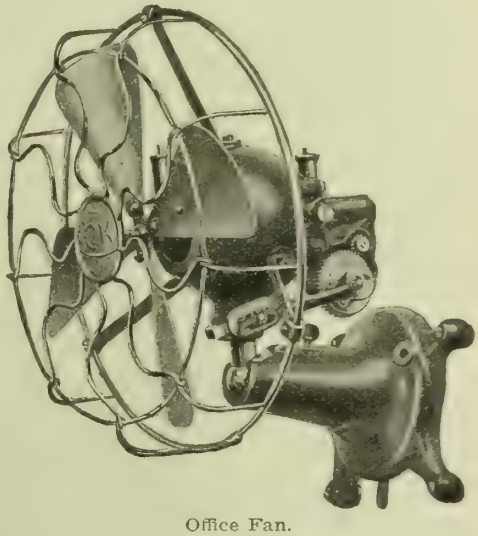
We have in stock at all times, D. C. Motors from 1/40 to 100 horse-power, having a wide range of speeds and at varying prices. These have all been rebuilt in our shop and will give as satisfactory service as a new machine. Any machine will be sent on trial, subject to return if not satisfactory in every respect and exactly as represented. Pulley, starting box or rheostat furnished with machines above ¼ H. P. Our guarantee goes with every machine. Get a copy of our Bargain List.

Fans

When you need a fan, whether for ventilating purposes or to increase the comfort of your office or home, remember that we have a stock of fans that is equal to any electrical house in the country and at prices below what the average contractor can buy them for. All are carefully overhauled and refinished. We guarantee them to be in first class condition, and will ship them for inspection and trial subject to return if not as represented. Office fans, $5.00 to $10.00.



Exhaust Fan.



Office Fan.

Repair Work

Quick service on repair work means money saved for you when you have a break down. Our shop is equipped with every up-to-date feature to turn out the highest grade repair work on short notice. Rewinding and alterations in motors, generators and switchboards. All work fully guaranteed.

Motors Rented

For emergency service, to replace a broken-down machine, we can furnish motors or generators of any size and capacity at moderate rates. This means a great saving in time when time means money.

OUR SERVICE

When a mining engineer wants something, he usually wants it in a hurry. A wait often means money lost. The **hurry-up order** is our specialty, not only on goods bought, but on machines rented for emergency service and repairs. Wire us for what you need. Our stock is so complete that we can almost invariably furnish it at once. A telegraphic order means goods on the way to you within a few hours at most, and in the case of repairs immediate attention and the apparatus returned to you with the least possible delay.

BE SURE THAT YOUR NAME IS ON OUR MAILING LIST.

MILLER-OWEN ELECTRIC CO., INC.

Pittsburgh's Electrical Clearing House

The House With a Reputation for Square Dealing

Office, Warerooms, Shop

217-219 First Avenue, Pittsburgh, Pa.

Phones: 1713 Court, 2251 Pitt

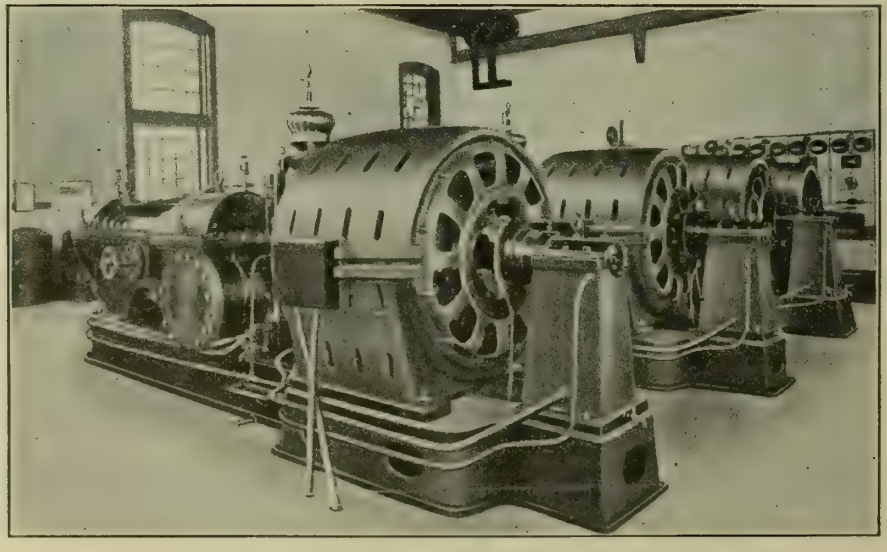
NEW AND SECOND HAND

Steam and Electric Machinery, Mine Equipment, Etc.

We Buy Sell, Repair and Exchange

Products

We have in stock and available, A. C. and D. C. Motors and Generators; Switchboards; Motor Generator Sets; Motor Driven Fans; Mine Hoists, Motor Driven; Pumps; Steam Engines; Compressors; Starting and Field Rheostats; Hoist Motors; Extra Armatures; Mining Machines; Electric Locomotives; Mine Cars, Etc.



2—400 K. W. 3 Phase 60 Cycle 2300 Volt Westinghouse Parsons Steam Turbine Units sold to a Coal Mining Co. in Penna.

These two units were installed in 1908 in the Municipal Electric Plant of the City of Anderson, Ind. Later a 750 K. W. unit was added. Being in need of additional generating capacity and lacking the room to instal a fourth unit it was necessary to abandon the two 400 K. W. units to make room for a 3000 K. W. unit which they purchased in October, 1914. The two 400 K. W. units were recently shipped to our clients and the 3000 K. W. unit is now being installed. These two 400 K. W. units had not seen over four years of actual service. A carefull examination and a running load test showed them to be in good operative condition throughout. They were equipped with all auxilliaries, including condenser, vacuum pump, motor driven circulating pump, motor generator exciter set and switchboard equipment.

Our price, $6,000.00. Manufacturers price, $21,000.00; saving $15,000.00.

This is an example of the many opportunities offered on the second hand market to purchase modern equipments at a good saving over the cost of new.

We Guarantee Satisfaction

and at least 100 cents value for every dollar spent with us.

Telephones:
Grant 1516 and 1517.

Warehouse Telephone
Cedar 4145.

EDGAR M. MOORE & CO.

PITTSBURGH, PA.,

Offices:
809-810 Farmers Bank Bldg.

Warehouse:
918-920 Behan St., N. S.

NEW AND USED EQUIPMENT.

Electrical	Steam	Gas
Generators	Engines	Engines
Motors	Boilers	Compressors
Switch Boards.	Pumps.	Tanks.

We have the largest stock of First Class Apparatus of above character between New York and Chicago.

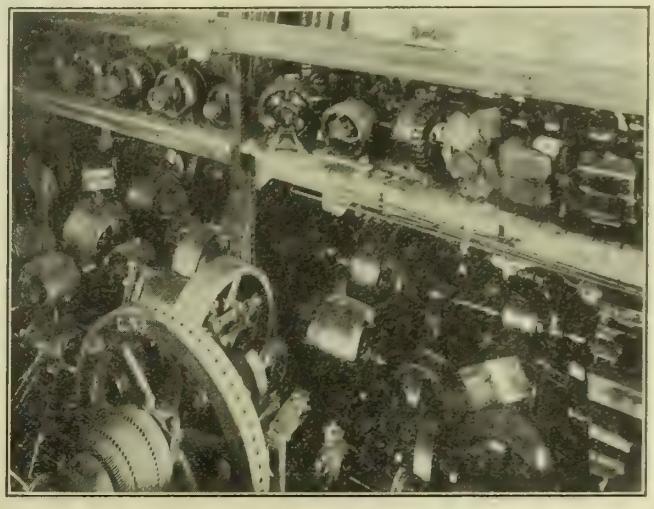
We will sell, buy, rent and exchange.

Representatives of American Spiral Riveted Pipe Works, New York and Chicago. Spiral Riveted Pipe.

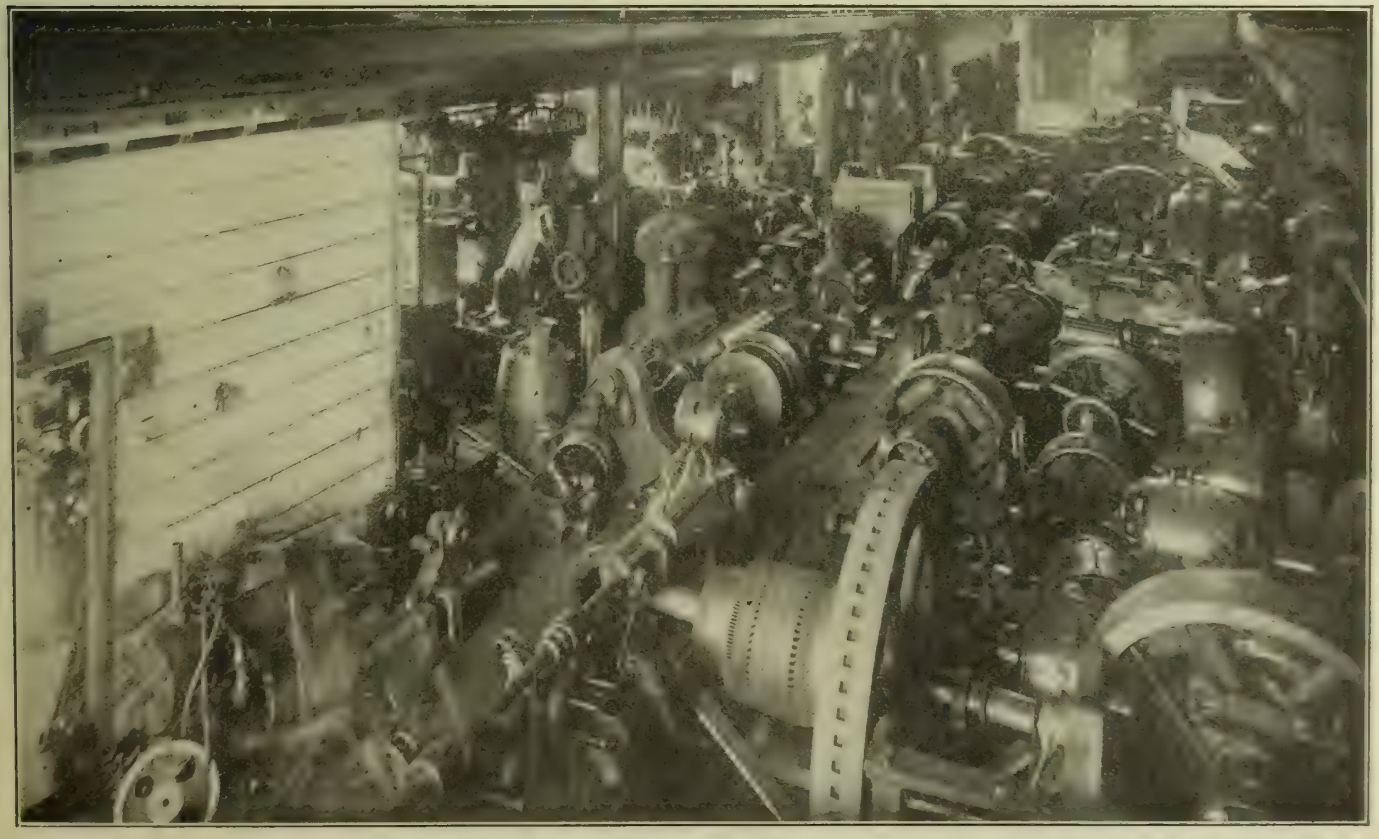
Sizer Forge Co., Buffalo. Forgings.



Exterior View of Our Warehouse.



Corner Warehouse, Showing Motors, Generators, Etc.



General View Interior of Warehouse, Showing Partial Stock.

Pittsburgh Machinery & Equipment Co.

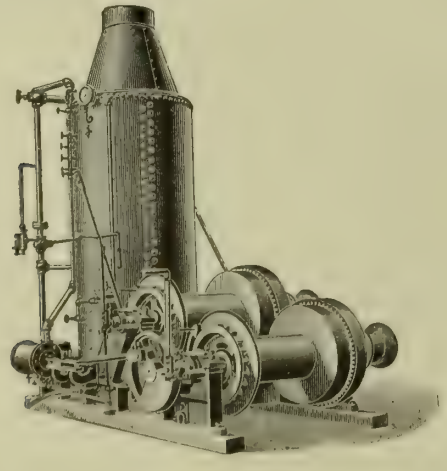
107 Federal Street

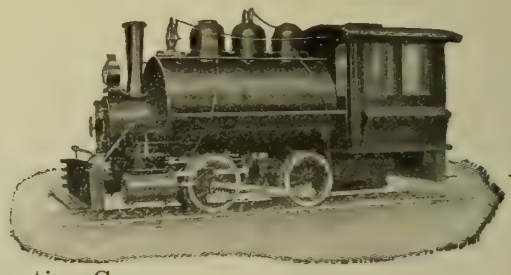
Pittsburgh, Pa.

New and Second Hand Contractors' Machinery and Equipment for Sale or Rent

We carry a large stock at our yards in Aspinwall, Pa.

Air Compressors.
Air Drills.
Boiler Feed Pumps.
Boilers—Locomotive Type.
Return Tubular.
Vertical Tubular.
Buckets—Grab and Dump.
Cableways.
Coal Handling Machinery.
Compressors—Channelers.
Concrete Mixers—Block Machines
Cranes—Locomotive.
Crushers—Hammer.
Roll.
Derricks.
Drills—Compressed Air
Steam.
Drums—Inclined Plane.
Dump Cars.
Engines—Steam.
Gas and Gasoline.
Haulage and Hoisting.
Second Hand.
Traction.
Stationary, for power plants.
Haulage and Hoisting Machinery.
Hoists—Steam or Electric.





Locomotive Cranes.
Locomotives—Steam.
Gasoline.
Electric.
Second Hand.
Mine Pumps.
Mixers—Concrete.
Portable Track.
Pumps—Boiler Feed.
Centrifugal.
Electric Driven.
Gas and Gasoline.
Hand; Portable
Power, for mine service, sinking, tank, triplex.
Pile Driving Equipment.
Rail Benders.
Railroad Equipment.
Rails—Light.
Relaying.
Rock Crushers.
Rock Drills.
Rope, Haulage and Tail Rope.
Second Hand Machinery and Equipment.
Sheave Wheels.
Shovels—Steam and Electric.
Steam Hammers.
Steel Rails.
Tanks—Steel.
Tramways.
Traction Engines.
Wheelbarrows.
Wheel Scrapers.
Wagons—Dump.

All used Equipment overhauled in our shops and sent out in strictly first class operative condition, ready to go to work.

We are Agents For

NORTHWESTERN CONCRETE MIXERS, CONCRETE BLOCK MACHINES, MOULDS, ETC.
HAISS CLAMSHELL BUCKETS.

We would be pleased to hear from you when you have any Plant which you wish to dispose of.



TRACK SECTION

Engineering Data

Specifications and Dimensions of Light Steel Rails.

Curvature of Track—Table.

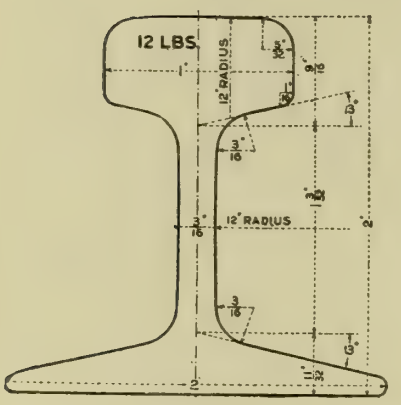
Frog and Switch Data.

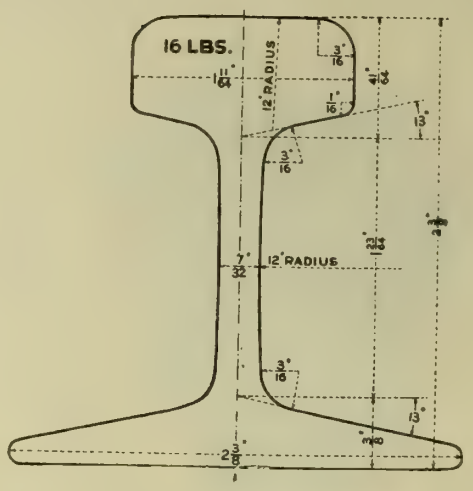
Rail Data.

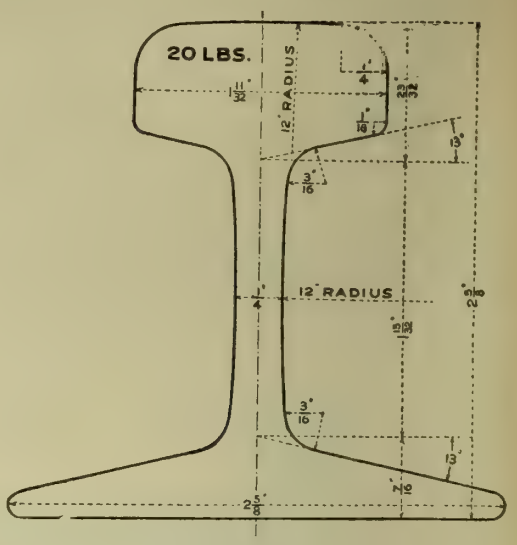
The following manufacturers and dealers have catalogue descriptions in this section:

Buckeye Rolling Mill Co.
Cambria Steel Co.
Cincinnati Frog & Switch Co.
Fairmont Mining Machinery Co.
Foster, L. B., Co.
Frank, M. K.
Green, L. A.,
Indianapolis Switch & Frog Co.
Sweet's Steel Co.
United States Rail Co.
Weir Frog Co.
West Virginia Rail Co.
Wharton, Wm. Jr., & Co., Inc.

For additional desctiptions of Track Equipment, not appearing in this section, refer to Index of Products in front of book.







Light Steel Rails

A. S. C. E. Sections, Weighing Less Than 45 Pounds Per Yard.

1, Rails may be rolled from old steel rails, heavy seconds or from billets.

2. When rails are rolled from old steel rails, the stock shall be free from slivers, fins, cracks or other defects which will prevent a sound finished product.

3. When rails are rolled from new heavy steel seconds, the stock must be free from slivers, fins, cracks or other defects, and must not have been previously condemned on account of chemical analysis, which must conform to Section 5 below.

4. When rails are rolled from billets same shall be of a uniform character of steel. None shall be from discard of ingots, and special precautions shall be taken to avoid the use of billets with piping, segregation of elements or slag which will roll to an unsound product. Billets shall not be used from off heats, unless they come within the chemical analysis given in Section 5.

5. Rails shall conform to a chemical composition of not more than 0.10 per cent. phosphorous, 0.20 per cent, silicon, 0.80 per cent. manganese, 0.06 per cent. sulphur and from 0.30 to 0.50 per cent. carbon.

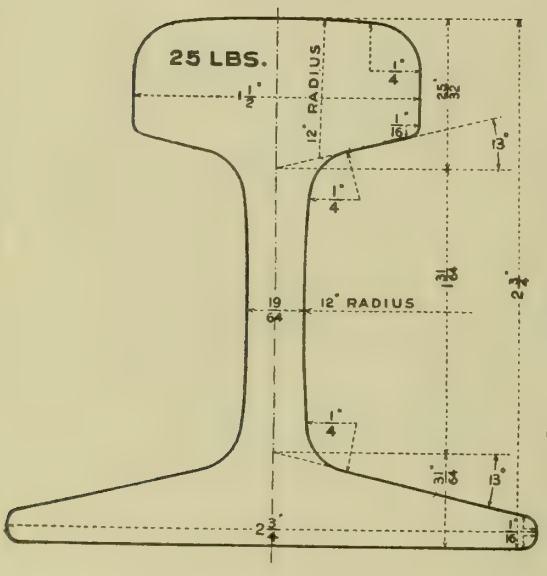
6. Section shall conform accurately to template. A variation in height of 1-32 in., either more or less, will be permitted.

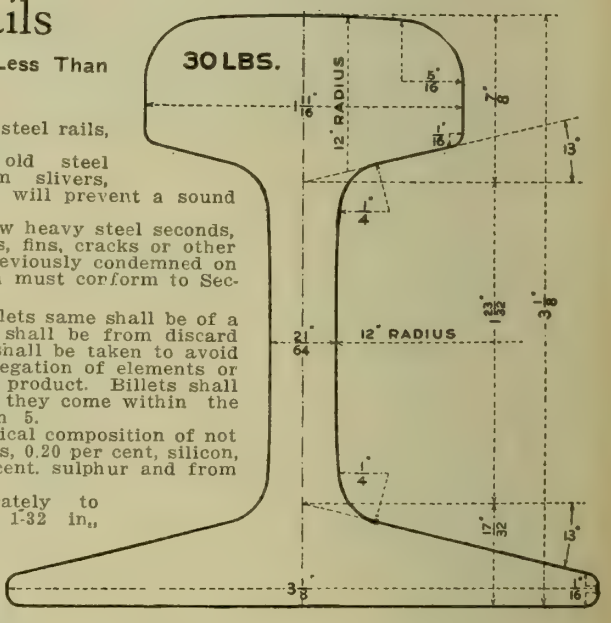
7. Rails will be accepted and paid for according to weight, and a variation of 1 per cent permitted.

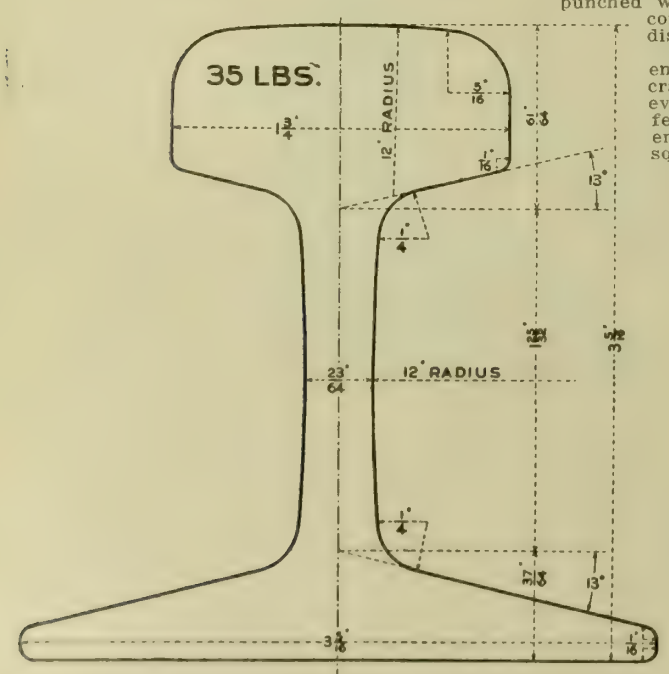
8. The Standard length of rails shall be 30 ft., with mill lengths down to 22 ft., permitted.

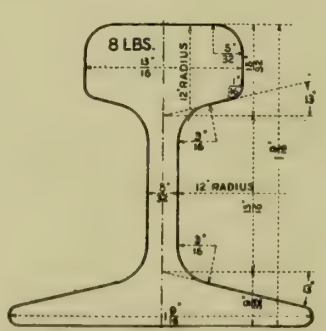
9. Rails to be either drilled or punched with circular holes, and splice bars punched with elliptical holes; same to conform to standard sizes and distances.

10. Rails shall be straightened while cold, free from cracks, slivers, injurious seams, evidence of burning or other defects; they shall be sawed at ends within 1-16 inch of exact square.









Courtesy United States Rail Co.

Frog and Switch Data

Give the following data when sending inquiries:

Height of rail .....

Weight of rail .....

Distance from end of rail to center of first splice hole. .....

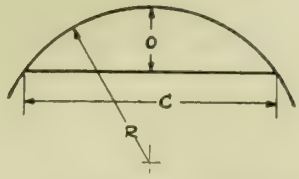
Distance from center of first splice hole to center of second splice hole. .....

Angle in degrees and minutes or number of Frog. .....

Length of switch points. .....

Gauge of track .....

Curvature of Track Rails



Middle Ordinates (O) for Curves of Various Radii (R), on Chords (C) of Various Lengths.

Curvature		Length of Chord (C), Feet					
Radius (R), Feet	Degrees	10	15	20	25	30	50
		Height of Ordinate (O), Inches					
10	.....	16.08	40.56	120.00	.....	.....	.....
15	.....	10.33	24.24	45.85	80.40	180 00	.....
20	286° 38′ 36″	7.69	17.28	32.16	52.55	81.25	....
25	229° 18′ 27″	6.00	13.56	25.10	40.20	60.00	300.00
30	191° 5′ 25″	4.20	10.67	17.53	27 66	40.60	120 00
50	114° 39′ 17″	3.00	6.84	12.12	19.07	27 66	84.00
75	76° 26′ 10″	2.01	4.56	8.04	12.50	18 20	51 56
100	57° 19′ 38″	1.51	3.36	6.03	10.02	13 58	38.20
125	45° 51′ 42″	1.20	2 76	4 81	7.51	10 86	30.32
150	38° 13′ 5″	1 01	2 28	4.01	6.31	9.03	26.00
200	28° 39′ 49″	.77	1 74	3.00	4.69	6.78	18.84
250	22° 55′ 51″	.60	1 44	2.40	3.76	5.41	15 06
500	11° 27′ 56″	.30	72	1.21	1.87	2.71	7.52
750	7° 38′ 37″	.22	.46	.80	1.32	1.81	5.01
1000	5° 43′ 58″	.16	.34	60	.94	1.36	3.76

Courtesy Goodman Manufacturing Co.

FROG AND SWITCH DATA

No. Frog	Spread Per Foot	Frog Angle	RADIUS CURVE IN FEET					Switch Points Suitable Lengths
			Gauge 3′ 0″	Gauge 3′ 6″	Gauge 3′ 8″	Gauge 4′ 0″	Gauge 4′ 8½″	
1	12″	53° 0′	6.00	7.00	7.33	8.00	9.41	4′ 0″
1¼	9 5/8″	43° 40′	9.36	10.93	11.11	12.50	14.68	4′ 0″
1½	8″	36° 52′	13.50	15.75	16.50	18.00	21.19	4′ 0″
1¾	6 7/8″	31° 53′	18.31	21.44	22.11	21.12	28.74	4′ 0″
2	6″	28° 04′	24.00	28.00	29.33	32.00	37.65	5′ 0″
2¼	5 11/32″	25° 03′	30.37	35.44	37.12	40.50	47.67	5′ 0″
2½	4 13/16″	22° 37′	37.50	43.75	45.83	50.00	58.85	5′ 0″
2¾	4 3/8″	20° 37′	45.37	52.94	55.44	60.50	71.71	5′ 0″
3	4″	18° 55′	54.00	63.00	66.00	72.00	81.75	7′ 0″
3¼	3 11/16″	17° 30′	63.37	73.94	77.37	84.50	99.46	7′ 0″
3½	3 15/32″	16° 16′	73.50	85.75	90.00	98.00	115.27	7′ 0″
3¾	3 3/16″	15° 11′	84.37	98.44	107.21	116.96	137.57	7′ 0″
4	3″	14° 15′	96.00	112.00	117.33	128.00	150.66	7′ 0″
4¼	2 27/32″	13° 26′	108.37	126.43	132.15	144.50	169.79	7′ 0″
4½	2 21/32″	12° 41′	121.50	141.75	148.50	162.00	190.60	10′ 0″
5	2 13/32″	11° 25′	150.00	175.00	183.33	200.00	235.40	10′ 0″

Courtesy Helmick Fdy. & Machine Co.

RAILROAD SPIKES

Size Measured Under Head	Average No. per Keg of 200 Lbs.	Ties Two Feet Between Centers; Four Spikes per Tie Makes per Mile	Rail Used Weight per Yard
5½x9-16	360	5920 lbs. 29 1-3 kegs	45 to 100
5 x9-16	405	5230 lbs. 26 kegs	40 to 56
4½x9-16	460	4606 lbs. 23 kegs	35 to 40
5 x½	505	4460 lbs. 21 kegs	
4½x½	535	3960 lbs. 19 4-5 kegs	30 to 35
4 x½	605	3515 lbs. 17½ kegs	25 to 35
3½x½	670	3180 lbs. 15⅞ kegs	20 to 30
4½x7-16	690	3090 lbs. 15½ kegs	
4 x7-16	780	2739 lbs. 13 3-5 kegs	
4½x⅜	780	2730 lbs. 13 3-5 kegs	16 to 25
3½x7-16	890	2377 lbs. 12 kegs	
4 x⅜	1025	2044 lbs. 10 1-5 kegs	
3½x⅜	1250	1740 lbs. 8½ kegs	16 lbs.
3 x⅜	1380	1592 lbs. 8 kegs	
2½x⅜	1650	1280 lbs. 6 2-5 kegs	12 lbs.

RAILS Tons per mile required of following weights per yard.

Weight per Yard	Tons 2240 Lbs. per Mile.
12 lbs.	18.86
16 lbs.	25.14
20 lbs.	31.43
25 lbs.	39.29
30 lbs.	47.14
35 lbs.	55.00
40 lbs.	62.86
45 lbs.	70.71
50 lbs.	78.56
56 lbs.	88.00
60 lbs.	94.29
65 lbs.	102.14
70 lbs.	110.00
75 lbs.	117.86
80 lbs.	125.71
85 lbs.	133.57
90 lbs.	141.43
100 lbs.	157.14

CROSS TIES

Per Mile.

Center to Center.	No. Ties
18 inches	3520
21 inches	3017
24 inches	2640
27 inches	2348
30 inches	2113

SPLICE JOINTS

Per Mile

Two bars to each joint.

Rails 20 feet long 528 joints.
Rails 24 feet long 440 joints.
Rails 30 feet long 352 joints.
Rails 33 feet long 320 joints.

Courtesy W. Va. Rail Co.

Comparative table showing price in Gross Tons of 2240 lbs. with corresponding price in Net Tons of 2000 lbs. and price per Cwt.

Gross Ton	Net Ton	Cwt.	Gross Ton	Net Ton	Cwt.
$25.00	$22.32	$1.116	$32.75	$29.24	$1.462
25.25	22.54	1.127	33.00	29.46	1.473
25.50	22.76	1.138	33.25	29.68	1.484
25.75	22.99	1.149	33.50	29.91	1.495
26.00	23.21	1.160	33.75	30.13	1.506
26.25	23.43	1.171	34.00	30.35	1.517
26.50	23.66	1.183	34.25	30.58	1.529
26.75	23.88	1.194	34.50	30.80	1.540
27.00	24.10	1.205	34.75	31.02	1.551
27.25	24.33	1.216	35.00	31.25	1.562
27.50	24.55	1.227	35.25	31.47	1.573
27.75	24.77	1.238	35.50	31.69	1.584
28.00	25.00	1.250	35.75	31.91	1.595
28.25	25.22	1.261	36.00	32.14	1.607
28.50	25.44	1.272	36.25	32.36	1.618
28.75	25.66	1.283	36.50	32.58	1.629
29.00	25.89	1.294	36.75	32.81	1.640
29.25	26.11	1.305	37.00	33.03	1.651
29.50	26.33	1.316	37.25	33.25	1.662
29.75	26.56	1.328	37.50	33.48	1.674
30.00	26.78	1.339	37.75	33.70	1.685
30.25	27.00	1.350	38.00	33.92	1.696
30.50	27.23	1.361	38.25	34.15	1.707
30.75	27.45	1.372	38.50	34.37	1.718
31.00	27.67	1.383	38.75	34.59	1.729
31.25	27.90	1.395	39.00	34.82	1.741
31.50	28.12	1.406	39.25	35.04	1.752
31.75	28.34	1.417	39.50	35.26	1.763
32.00	28.57	1.428	39.75	35.49	1.774
32.25	28.79	1.439	40.00	35.71	1.785
32.50	29.01	1.450			

RULE:

To convert price per Gross Ton into price per net ton, divide by 1.12.
To convert price per Net Ton into price per Gross Ton, multiply by 1.12.
To convert price per Gross Ton into price per 100 lbs. divide by 22.4.

Courtesy W. Va. Rail Co.

THE BUCKEYE ROLLING MILL CO.

General Offices: Steubenville, O.

MILLS, NEWARK, OHIO.

BRANCH OFFICES:

NEW YORK: 39 Cortlandt St. ST. LOUIS: New Bank of Commerce Bldg.
CHICAGO: Peoples Gas Bldg. KANSAS CITY: R. A. Long Bldg.

Products

Exclusively Manufacturers of Light Steel Rails and Accessories—Splice Bars, Bolts, Nuts, Spikes, Frogs and Switches.

Quality and Quick Delivery

Two things are especially essential to users of Light Steel Rails:

QUALITY AND QUICK DELIVERY.

We practice what we preach, and furnish both.

BUCKEYE RAILS are the STANDARD FOR QUALITY, and have been all the years we have been in business.

QUICK DELIVERY is our specialty, whether you want one ton or one hundred.

Special lengths furnished if desired.

Let Us Have Your Next Order.



Here's Where We Make 'em.

INSPECTION

Our products are all carefully inspected, as made, at our mills, and not on paper.

We want you to look them over, at your end of the line. That's the inspection that counts, after all. Our guarantee does the rest.



The Best Equipped Light Steel Rail Mill in the Country.

SWEET'S STEEL COMPANY

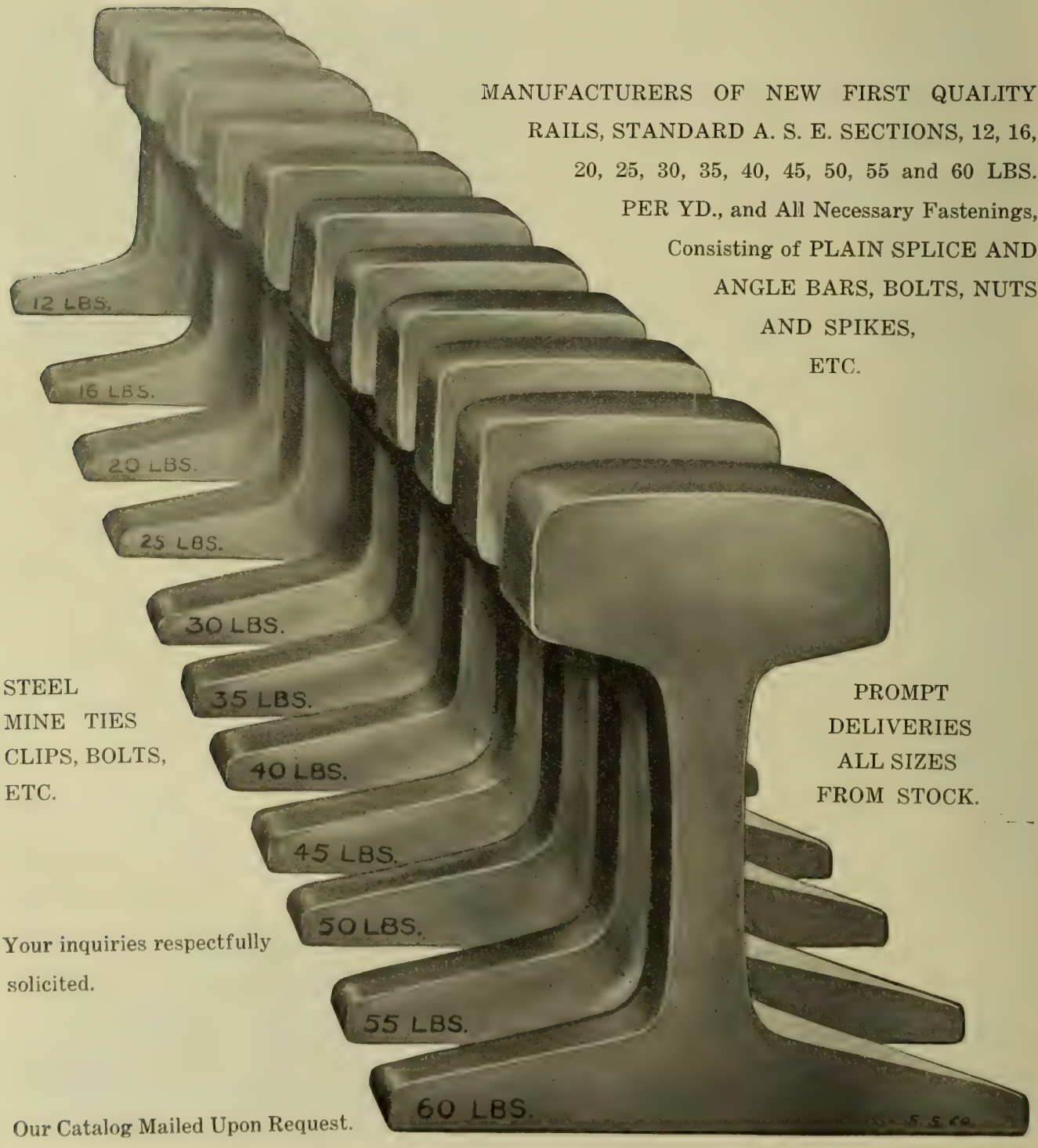
Mills and General Offices:

WILLIAMSPORT, PA.

Branch Offices:

New York, 1123 Broadway Philadelphia, Land Title Bld'g.

MANUFACTURERS OF NEW FIRST QUALITY RAILS, STANDARD A. S. E. SECTIONS, 12, 16, 20, 25, 30, 35, 40, 45, 50, 55 and 60 LBS. PER YD., and All Necessary Fastenings, Consisting of PLAIN SPLICE AND ANGLE BARS, BOLTS, NUTS AND SPIKES, ETC.



STEEL MINE TIES CLIPS, BOLTS, ETC.

PROMPT DELIVERIES ALL SIZES FROM STOCK.

Your inquiries respectfully solicited.

Our Catalog Mailed Upon Request.

OUR FULL LINE OF RAILS.

UNITED STATES RAIL COMPANY

Main Office and Rolling Mills

CUMBERLAND, MD.

Largest Independent Manufacturers of

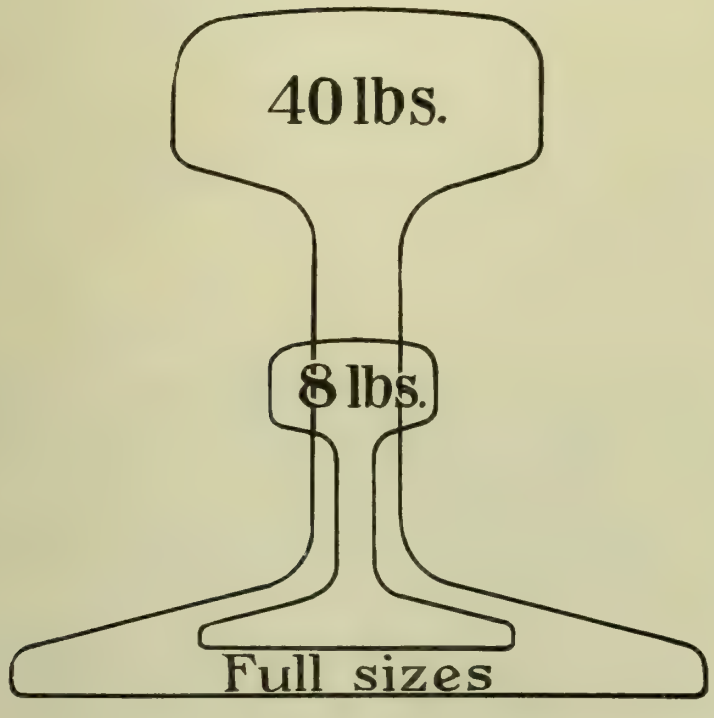
Standard A. S. C. E. Section

LIGHT STEEL RAILS

HENRY SHRIVER, President.
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Plain and Angle Splice Bars.



Bolts and Spikes.
Frogs and Switches.

8, 12, 16, 20, 25, 30, 35, and 40 lbs. per yard.

All rails rolled by us are inspected by Hildreth & Co., Inspecting Engineers of New York City, whose inspectors are stationed at our plant, at Cumberland, Md., in the interest of customers.

WE CAN FURNISH RAILS CUT TO SPECIAL LENGTHS FOR ALL PURPOSES.

RELAYING RAILS 56 TO 100 LBS. PER YARD.

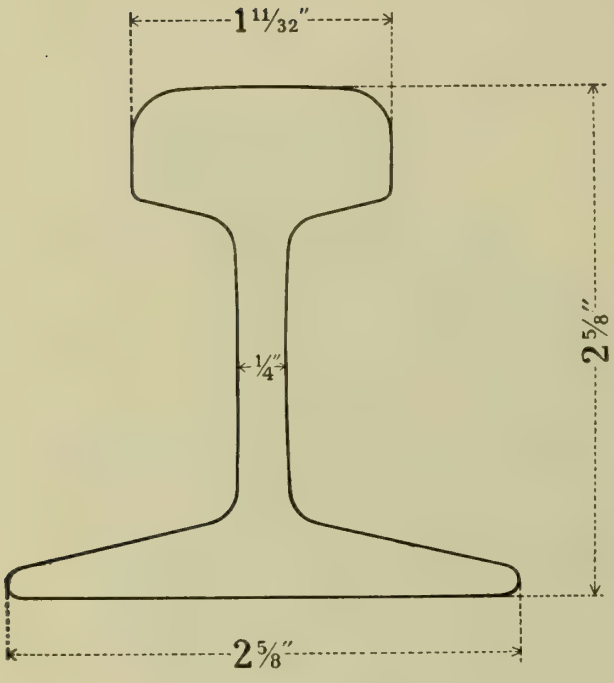
WRITE FOR PRICES. **IMMEDIATE SHIPMENT.** **ANY QUANTITY.**

THE WEST VIRGINIA RAIL CO.

Manufacturers of

Light Steel Rails, Joints and Spikes.

MILLS AND GENERAL OFFICE: HUNTINGTON, W. VA.



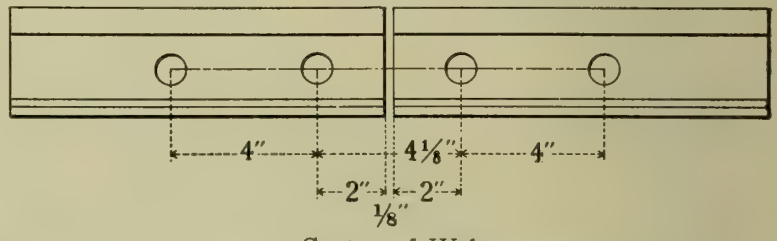
20 Lbs. per Yard
31.43 Gross Tons per Mile of Single Track
168 Feet of Single Track per Gross Ton.

We manufacture rails from 12 to 40 lbs. inclusive. For the past eight years we have devoted our entire attention exclusively to making good first quality light rails. We are rail experts and you will find our satisfied customers in every mining state in the Union. Wherever there are mines you find the name of West Virginia Rail Company stands for quality and integrety.

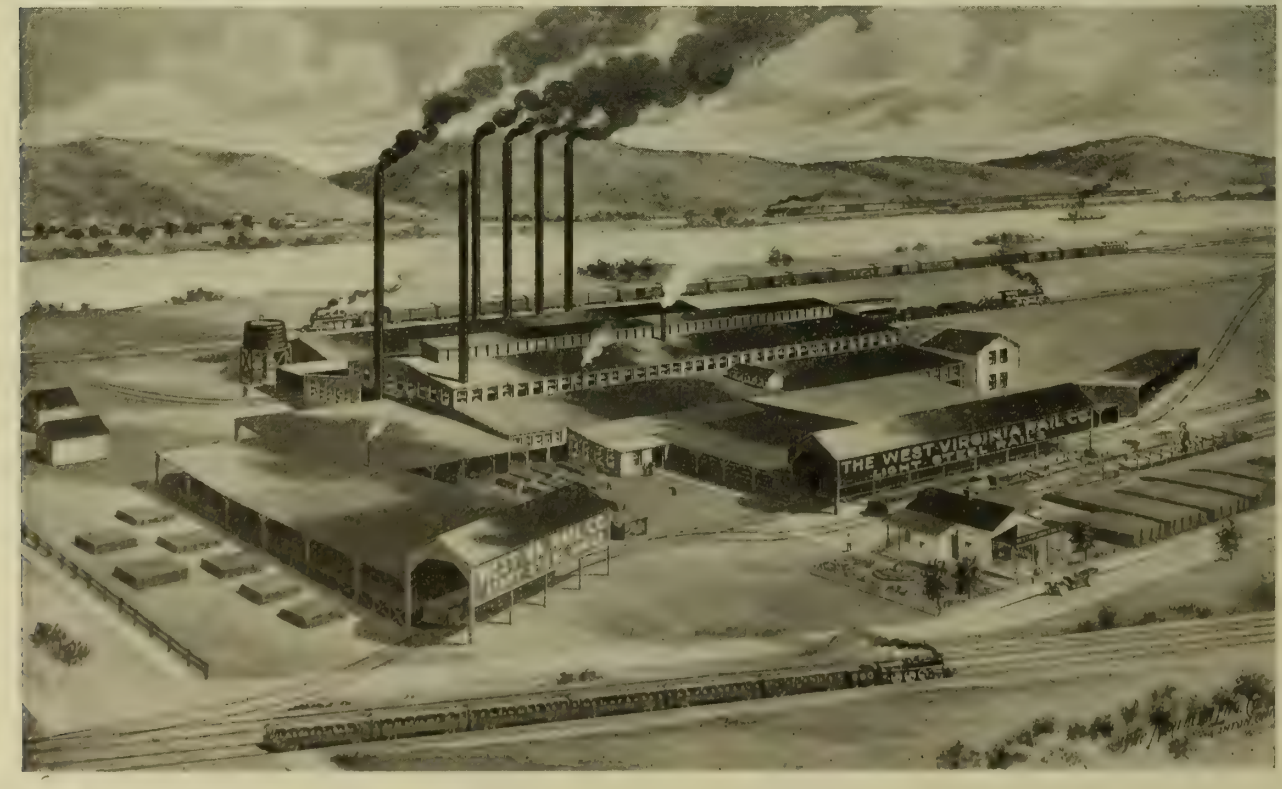
We carry a large stock of rails as well as splices, bolts and spikes on hand and can give prompt shipment at all times.

Send for our Bulletin which gives you valuable rail data, including rail dimensions, number of spikes in keg, number of cross ties required per mile, number of tons required per mile of track of various size rail; also comparative table giving price equivalents in gross ton, net ton and cwt.

"All our rails are A. S. C. E. Section."



Center of Web
Diameter of Holes 5/8 Inch.



L. B. FOSTER COMPANY

PITTSBURGH, PA.

Rails--New and Relaying, Second-Hand Pipe and Equipment

Relaying Rails

500 tons 90lb with Angle Fish Plates
2500 tons 85lb " " " "
2000 tons 70lb " " " "
500 tons 67lb " " " "
300 tons 65lb " " " "
2000 tons 60lb " " " "
1500 tons 56lb " " " "
150 tons 50lb " " " "

300 tons 45lb with angle and Fish Plates
500 tons 40lb " " " "
200 tons 40lb " Plain " "
700 tons 35lb " Angle " "
200 tons 30lb " " " "
200 tons 30lb " Plain " "
200 tons 25lb " Angle " "
200 tons 25lb " Plain " "

Rails Cut to Lengths for Special Purposes

All Relaying Rails average 30 ft. in length, uniform in section, height and drilling, straight, free from surface bends, breaks, kinks or splits and show very little wear. Inspection during loading or subject inspection and approval at destination point. Quick shipment guaranteed.

New Rails

200 tons 8lb per yard
300 tons 12lb " "
500 tons 16lb " "
300 tons 20lb " "
With complete Plain Splices.

500 tons 25lb per yard
500 tons 30lb " "
500 tons 35lb " "
500 tons 40lb " "
With complete Angle or Plain Splices.

New Rails available for quick shipment in car load or less carload lots, at MANUFACTURERS' PRICES. Can drill for bonding or cut to special lengths.

Rail Splices—(New and Second-Hand.)

For years we have made a specialty of supplying Splice Bars, Angle and Plain, in any quantity, guaranteed to fit all sections no matter how old or how modern the Rail. We have the patterns for all drillings and sections, sizes 8 lbs. to 125 lbs. Can furnish with or without Bolts. To secure accurate fit send by express collect, a sample of bar or template.

We make Combination Splices to connect Rail sections of different height and drilling.

Second Hand Pipe

All sizes from ¼ in. to 24 in. for steam Water, Gas and Oil Lines. Can save you 30% to 50% on Second-hand Pipe and guarantee materials to give service equal to that of New. Shipments subject to inspection and approval at destination point. New Pipe at Manufacturers' prices.

Frogs and Switches—(New and Second-Hand.)

All kinds of Regular and Industrial Track work for Steam and Electric Railroads, Mines, Contractors, Quarries and Logging Railroads. Portable Track.

Track Accessories

Bolts, Nuts
Spikes
Tie Plates
Rail Braces
Car Movers
Rail Benders
Rail Forks
Rail Tongs
Drills and Saws

Second Hand Equipment

Locomotives
Cars
Boilers
Engines
Pumps
Compressors
Hoisting Engines
Electric Machines
Tools
Steam Shovels
Derricks
Orange Peel or Clam Shell Buckets

M. K. FRANK

Frick Bldg., Pittsburgh, Pa.

New and Relaying Rails, New and Second Hand Mine Cars and Mining Machinery

Products

New and relaying rails, spikes, bolts and nuts, splice bars, angle bars, frogs and switches, turntables, portable track, scrap iron, second-hand and new mine cars and mining machinery.

Rails

All sections of new and re-laying rail always carried in stock in our storage yards for immediate shipment. We always have large tonnages of the above on hand at our centrally located warehouses which makes no order too large for us to handle or too small for same to receive our immediate attention. We are equipped for cutting rail for use as buck staves, in the building of coke ovens, furnaces and other general uses where rails are far more serviceable and more economical.

Splice, Angle Bars, and Spikes, Etc.

We make a specialty of supplying railroad spikes, bolts and nuts, splice and angle bars for all track construction work.

Frogs and Switches

We are in position to furnish complete track equipment, and we always have in stock, for prompt shipment, large quantities of new and relaying frogs and switches. We also control the output of the Hitchcock patent cast steel frog, and will be pleased to send you catalogue of same which contains useful information.

Scrap Iron

If you have any scrap to dispose of at your plant and want any rail or equipment, advise us giving description of same, and we will make an exchange trade with you, giving you what you need for scrap and second-hand machinery.

We buy equipment from abandoned and worked out mines and have in our warehouse at all times, a large selection of pneumatic, electrical and steam mining machinery and second-hand and new mine cars.

Our complete stocks permit us to compete with all concerns handling our line, and on this basis we respectfully silicit your business and inquiries.



L. A. GREEN



Offices, First National Bank Building
PITTSBURGH, PA.



New and Used Rails and Machinery

Specialists in Mine Equipment

Rails

New and Relaying
Light and Heavy Sections.
Rails Cut to Length

One of our principal specialties for the past fifteen years has been new and relaying rails from 12 to 100 pound sections. We are in position to furnish almost any quantity of first-class relayers, subject to the most rigid inspection.

Due to the large tonnage of relaying rails we have sold we are in better position to judge quality than the average inspection bureau. We make no extra charge.

Switch and Frogs

Carried in Stock
Special Material
Built to Specification

Large numbers of coal companies have used our services, without cost, for the laying out, (on an economical basis), their yards, tipple and room turnouts.

Accessories

Splice Bars
Spikes, Bolts and Nuts
Track Tools

We manage to have for quick shipment at all times, splice bars for standard and odd section rails, punched for any drilling. Send an impression of the rail or a sample bar at our expense.

Machinery.

New and Second-Hand
Engines, Boilers
Pumps, Compressors
Electric Mining Machinery
and Locomotives
Motors, Dynamos
Iron and Woodworking
Machinery

Due to our large list of available machinery and equipment from the smallest article to the most up-to-date and expensive machinery, we are used as an exchange bureau. We may have in stock or on our list the very thing you so urgently desire, or a market for the machinery you wish to dispose of.

We only handle good usable equipment.

Contractors' Equipment

New and Second-Hand
Locomotive and Cars
Steam Shovels
Road Rollers
Stone Chushers
Concrete Mixers
Hoisting Machinery
Derricks, Buckets
Carts, Wagons, Etc.

In addition to the supplying of rails, machinery and equipment for the operating mine, we furnish equipment for the building of coal and coke plants from the sinking of the shaft to the complete equipping of the operating mine.

Pipe

New and Second-Hand

Supplies

For Mills, Mines and
Contractors

While we do not handle a complete line of supplies, we specialize on items that are most needed at the mine. The high grade and attractive prices are due to our volume of business in the specialties.

We offer you a service that is conscientious, effective and to your profit.

The Cincinnati Frog & Switch Company

—Manufacturers of—

Track Equipment for

Steam and Electric Railroads, Mines and Mills

General Office and Works CINCINNATI, OHIO

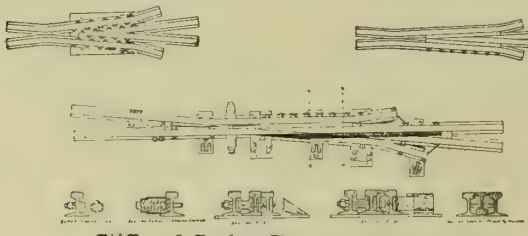
Products

Frogs, Crossings, Crossovers, Switches, Switch Stands, Guard Rails, Guard Rail Clamps, Rail Braces, Tipple Tracks, Tie Plates, Mine Turnouts, Portable Track, Steel Ties, Special Track Work and Layouts of every description.

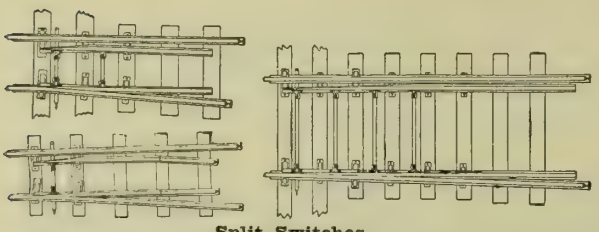
Specialty.

We specialize in Track Equipment for Coal Mines, standard or special layouts.

Our corps of expert engineers will solve your transportation problems. We make no charge for consulting engineering. Tell us your track troubles.

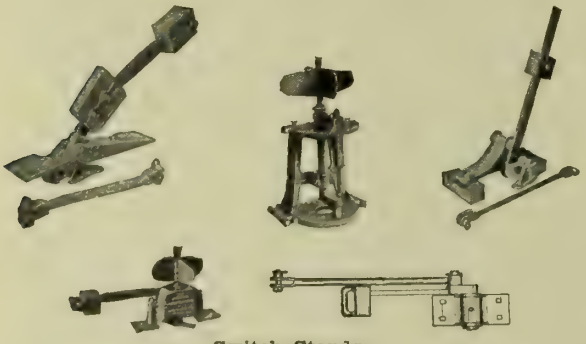


Stiff and Spring Frogs, various types.

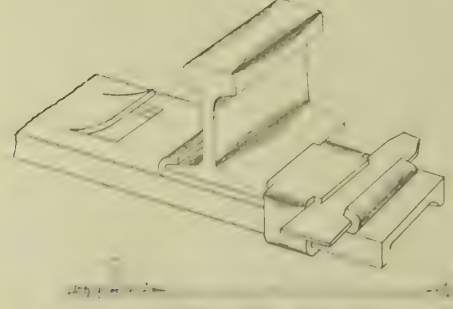


Split Switches.

We make about thirty types of switches for light and heavy rails.

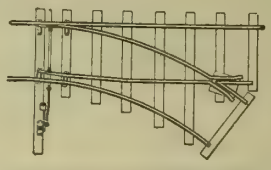


Switch Stands.



Steel Mine Ties.

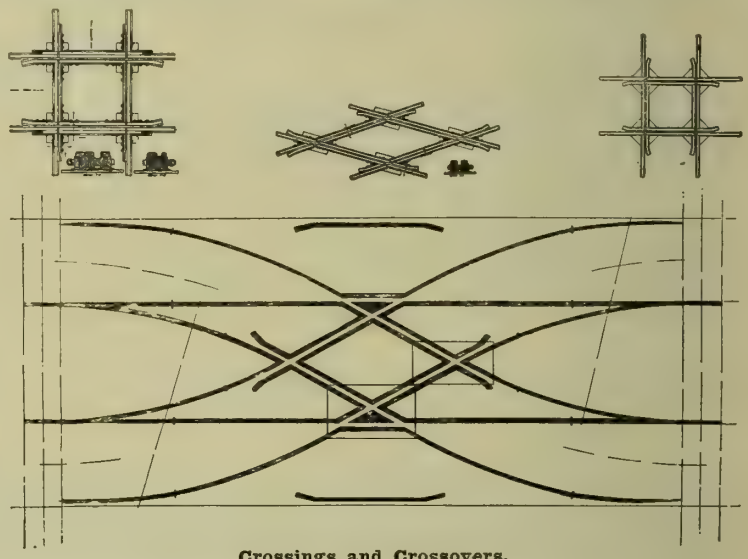
The small cut shows tie with extension rail in position. Ties can be furnished without the extension rail feature if desired.



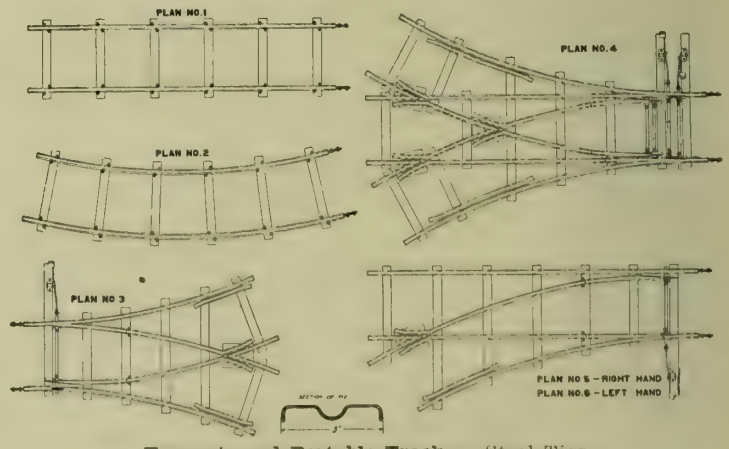
Curved Room Turnouts.

We have shipped thousands of these Curved Room Turnouts to mines and recommended their use on short radius curves.

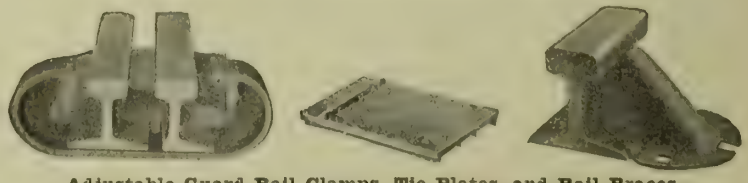
Please notice that the Frog Arms are made long enough to abut the Switch, thus eliminating the short filling rails, also saving two pairs of fishplates per turnout.



Crossings and Crossovers.



Turnouts and Portable Track on Steel Ties.



Adjustable Guard Rail Clamps, Tie Plates, and Rail Braces.

Deliveries and Facilities.

Our Plant is equipped with modern machinery and appliances; our workmen are experts. We carry an immense stock of raw material, and have excellent shipping facilities. Therefore, can furnish on short notice anything in the line of Track Equipment, either standard or special.

Ask for copy of our Catalog.

THE INDIANAPOLIS SWITCH & FROG CO.

General Offices and Works, SPRINGFIELD, O.

SALES OFFICES:—NEW YORK, CHICAGO, PORTLAND, ORE., LOS ANGELES, SAN FRANCISCO, KANSAS CITY, SPOKANE, SEATTLE.

Products.

Frogs, Switches, Crossings, Stands, Rail Braces and all track accessories for Rails from 8 to 100 lbs. per yard.

Service.

We design your layouts and make no charge for consulting engineering. Our facilities for making prompt shipments are of the best.

Quality Counts.

Cheap track layouts are false economy. Layouts scientifically and correctly designed and of the best material and workmanship last longer, save motive power, prevent derailments, breakdowns, damage and delay, and require less for up-keep.

Catalogue.

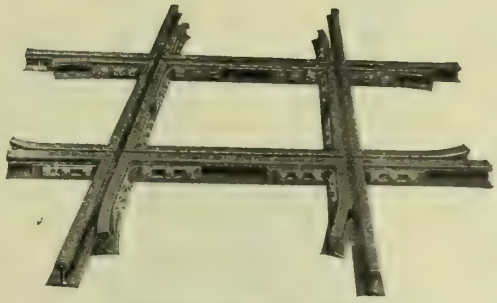
We have a large bound catalogue showing detailed descriptions of our product which will be sent upon application.



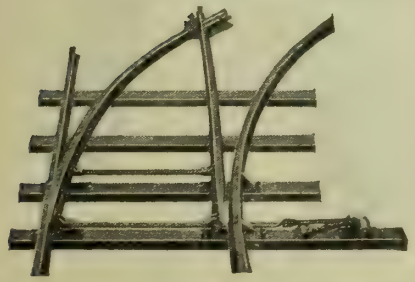
Single Rail Riveted Crossing.



Three-Way Switch with Ground Throw Stand.



Bolted and Filled Crossing.



Combination Switch and Frog for Short Radius with Ground Throw Stand.



Plain Ground Throw Stand.



Spring Ground Throw Stand.



Rigid Bolted and Cast Filled Frog.

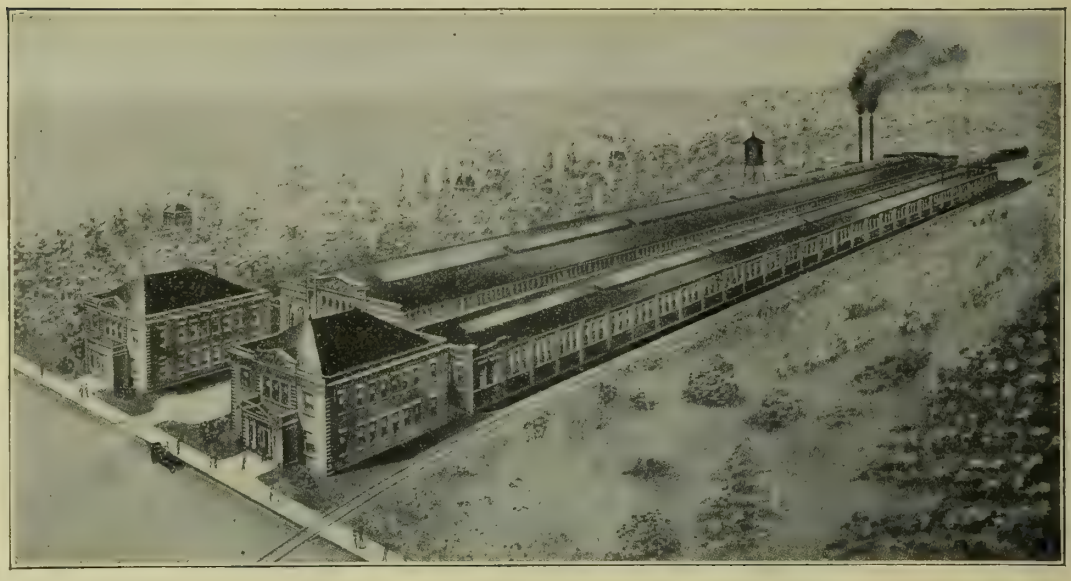
Established 1882

WEIR FROG COMPANY

Manufacturers of Frogs, Switches, Crossings Stands, Braces, Etc.

CINCINNATI, OHIO

OUR SHOP MADE TRACK WORK IS MORE DURABLE AND CHEAPER IN THE LONG RUN THAN YOUR BLACKSMITH MADE FROGS AND SWITCHES GOOD FIT GUARANTEED.



Outside View of Shop Located at East Norwood, Ohio

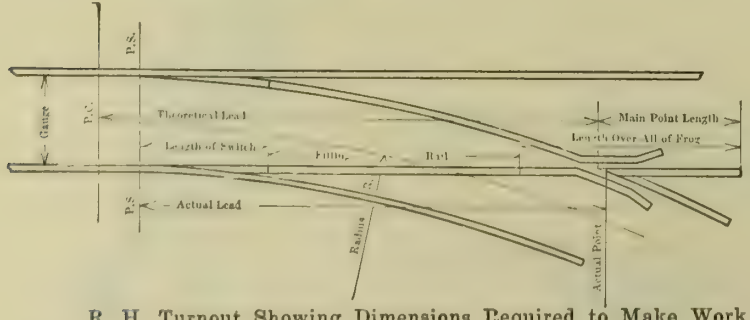
We carry at all times a stock of light rails varying from 8 lbs. to 40 lbs. and over. We can furnish complete turnouts of any radius, gauge and weight of rail; any frog angle or switch length. We make frogs by riveting the rails to plates, by bolting the rails together, of solid cast steel or of manganese steel. Our shop does nothing but frog and switch work. Its entire facilities are given to the manufacture of track work.



Malleable Iron Ground Throw—Throws Parallel to Track

This frog made without plates or rivets. It is made to fit angle and rails.

Low priced and durable.



R. H. Turnout Showing Dimensions Required to Make Work



Solid Cast Steel Frog

WRITE FOR CATALOGUE "C" GIVING TABLE OF TURNOUTS.

WILLIAM WHARTON JR. & CO., Inc.

25th Street & Washington Avenue

PHILADELPHIA, PA.

Manufacturers of

Switches, Frogs, Crossings, Etc., for Tracks in Mines, Mills and all kinds of Railways
Also Mine Car Wheels

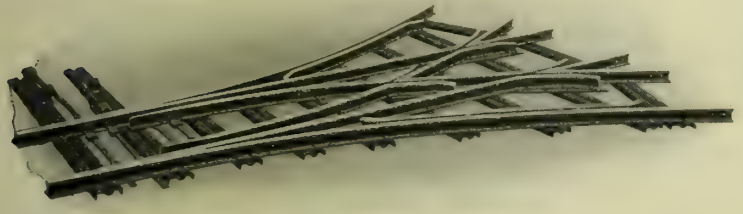
PORTABLE



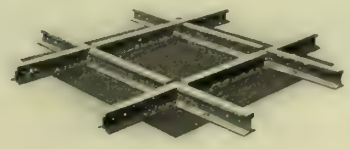
Portable Curved Section of Track.
We also furnish straight sections.



Portable Switch, with Throwing Lever.

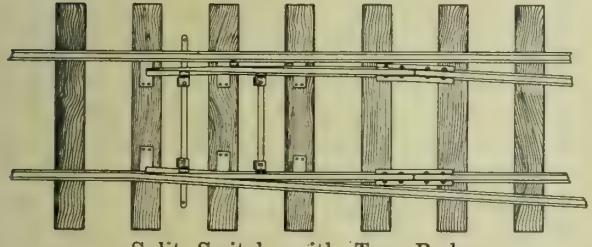


Portable Three-Way Switch, with Throwing Levers.

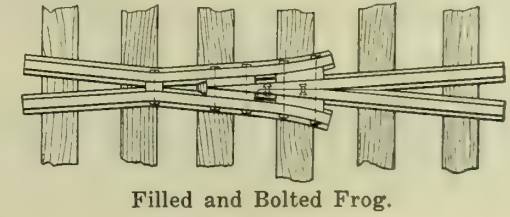


Portable Crossing.

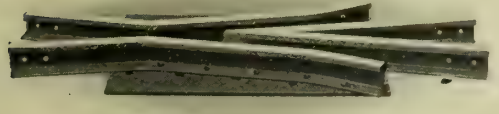
FOR PERMANENT INSTALLATION



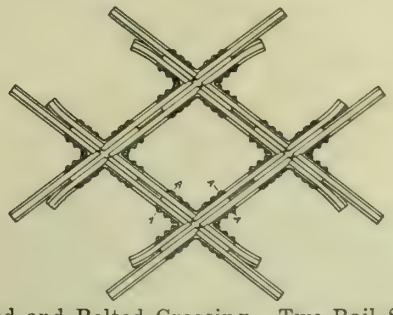
Split Switch, with Two Rods.



Filled and Bolted Frog.



Riveted Plate Frog.



Filled and Bolted Crossing. Two-Rail Style.



Ground Throw for Use With Either of the
Above Styles of Construction.

FAIRMONT MINING MACHINERY CO.

Regular Equipment.

Tipple Structures
Screens and Chutes
Loading Booms
Picking Tables
Conveyors—all types
Cable Car Hauls
Chain Car Hauls

General Offices and Works
FAIRMONT, W. VA.

TRADE MARK REGISTERED FAIRMONT 20-101

(The Mark of Quality.)

Specialties

Steel Mine Ties
R. R. Car Retarders
Portable—
Electric Mine Pumps
Power Coal Augers
Box Car Trucks
Mine Car Trucks

COAL MINE EQUIPMENTS

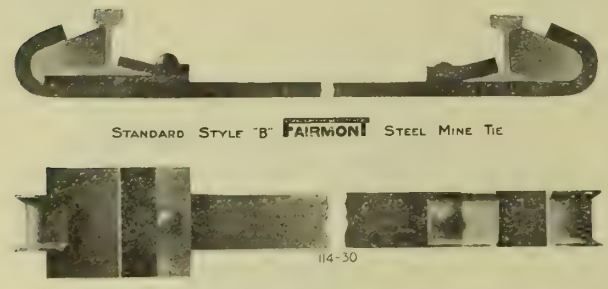
FAIRMONT Steel Mine Ties (Ross Patent).



STANDARD STYLE "A" FAIRMONT STEEL MINE TIE

113-30

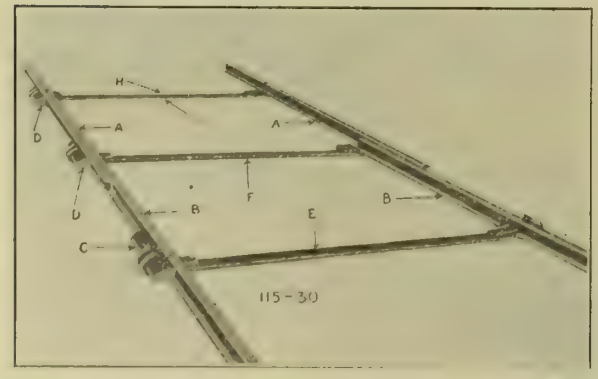
The best and most widely used Steel Mine Tie ever made. More than half million in use today.



STANDARD STYLE "B" FAIRMONT STEEL MINE TIE

114-30

Joint Tie for extreme conditions. Has base plate and clip 4" wide on one end.



A Section of track laid with Fairmont Standard Style "A" Steel Ties showing method of advancing track with Jumper Rail.

Fairmont Steel Mine Ties are made of a special Channel Section 2" wide, 9/16" high and 3/16" thick in web (which is heavier in thickness than any steel tie on the market), with gauge clip or same section riveted on tight and ends bent up and over (bent cold) for wedge.

This section gives exceptional stiffness for the size and makes a tie that stands up under most severe conditions for rooms and cross entry work. The thinnest part of the tie is 3/16" thick and will last for years. We have reports from ties that have been in mines where the worst of sulphur water exists for 3 to 5 years with aparently no bad results on ties.

We illustrate on this page our Standard Style "A" tie which is more widely used than any other steel tie; Standard Style "B" tie which is used by some mines as a joint tie, where heavy cars and gathering motors are used on the tracks, and a section of track showing jumper rail in position.

"A" is rail turned upside-down as jumper; "B" is rail in permanent position; "C" is wooden wedge (split out of old lumber or props) for holding rail firmly in place; "D" wedges along jumper rail—most miners find this unnecesary as rail when turned up-side-down fits snugly between bent-up end of tie and upright rail and stands up without wedge; "E", "F" and "H" are standard style "A" ties showing rails jointed at one end without splice plates; the joints are broken and jumper on right hand side is advanced almost to point for turning up in permanent position while on the left is just starting in.

On opposite page is shown a piece of track in a mine with a seven (7) ton turrent Mining Machine mounted on it, one side resting on jumper rail, and other illustrating of gathering motor operating on track laid on Fairmont Ties.

Make your track laying a pleasure for the miners and add more **Dollars** to the profit side of your balance sheet by adopting **Fairmont** Ties.

Write for particulars about trial and quantity purchases.

FAIRMONT MINING MACHINERY CO.

TRADE MARK REGISTERED FAIRMONT Steel Mine Ties

Advantages of Fairmont Ties.

They hold your tracks true to gauge, and the rail resting on floor between ties makes a solid track on which cars run easily and do not jump off.

They bring the track right down on the floor (the rail resting on floor between ties) which makes it easier to load cars, and in low coal saves taking up three or four inches of bottom, or taking down like amount of roof.

No splice bars, bolts or spikes required in laying the track; the wooden wedge holds the rail firmly in place. On tracks where heavy cars and gathering motors are used, we recommend style "B" ties at rail joints.

The extension of tracks to keep up close to coal is easily accomplished by using jumper rail as described on opposite page. This feature is not found in any other steel tie.

Cost is less than wood—we can prove it.

More coal loaded on cars account of having more height.

Loaders lay their own tracks, saving time and expense.

Less cost to handle steel ties and steel rails than wood.

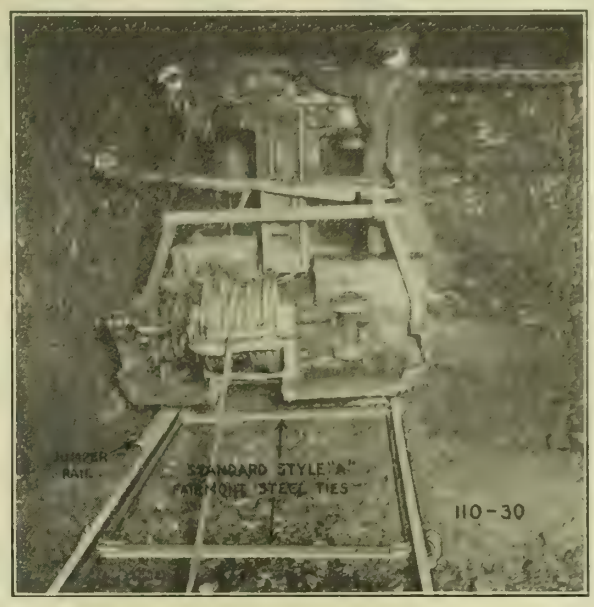
Less lift to put cars back on track in case of wreck.

No track gauge or other tools required for laying up tracks.

Only one-third (1/3) as many ties required as wood, and can be used for years.

Standard tie for 20 pound rail can also be used with 12 pound and 16 pound rail, and tie for 35 pound rail is good for 25 and 30 pound, which is quite an advantage in mines where they have more than one size rail.

In case of wreck and ties get bent they are easily straightened.



7 Ton Turret Mining Machine on Fairmont Steel Mine Tie Track—one side on Jumper Rail

Here is what they have to say about it:

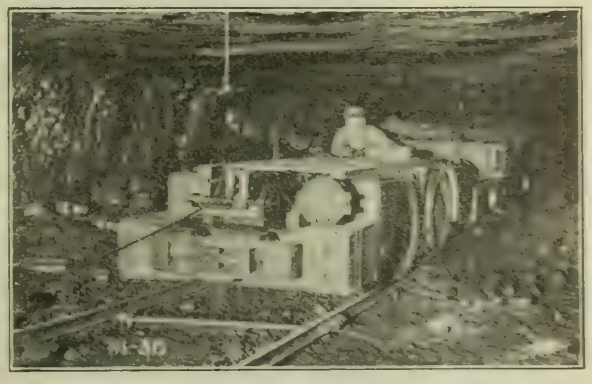
Fleming, Ky., October 28, 1914.
Fairmont Mining Machinery Co.,
Fairmont, W. Va.

Gentlemen:

I hand you herewith picture of our top-cutting machine in actual operation in Mine 303. You will notice in this picture the track is laid on "Fairmont" steel ties. This machine has a sweep of twenty-one feet and weighs seven tons, which gives you an idea of what strain is necessarily put upon these ties to hold it. This picture shows the rail turned upside down on the left hand side which is far better than balling it or laying it on the side. There is no question in my mind but that this tie even in high coal in this region is the greatest labor saving device that has as yet been brought forward.

Yours very truly,
Elkhorn Mining Corporation,
THOS. S. HAYMOND, Manager.

They have loads of timber and high coal yet they find it pays to use **Fairmont** Steel Ties.—Why don't you try them too?



Gathering Motor on Fairmont Steel Tie Track.

CAMBRIA STEEL COMPANY

General Sales Offices:
MORRIS BLDG, PHILADELPHIA, PA.

Works:
JOHNSTOWN, PA.

District Sales Offices:

ATLANTA
BOSTON
CHICAGO
CINCINNATI
CLEVELAND
DETROIT
JOHNSTOWN
LOS ANGELES
NEW YORK
PHILADELPHIA
PITTSBURGH
ST. LOUIS
SAN FRANCISCO
TACOMA
MONTREAL

Products

We manufacture Steel Rails in all standard sections from 12 to 125 pounds per yard, and accessories—Splice Bars, Bolts, and Nuts. We are exclusive manufacturers of the Patented Slick Steel Mine Ties.

The Slick Mine Tie

is of rolled steel section combining features of light weight with sufficient strength. There are no loose parts to lose—no spikes. The necessary rail fastenings, which consist of flanged buttons, are always in place, ready for use, and cannot become detached.

The tie is easy to lay. An ordinary adjustable or a special solid wrench is all that is required. Special wrenches furnished with orders. A quarter turn of the wrench clamps each fastening button on the rail, thus much saving in time and labor.

It is stronger than a wooden tie and yet lighter, therefore easier to transport from place to place.

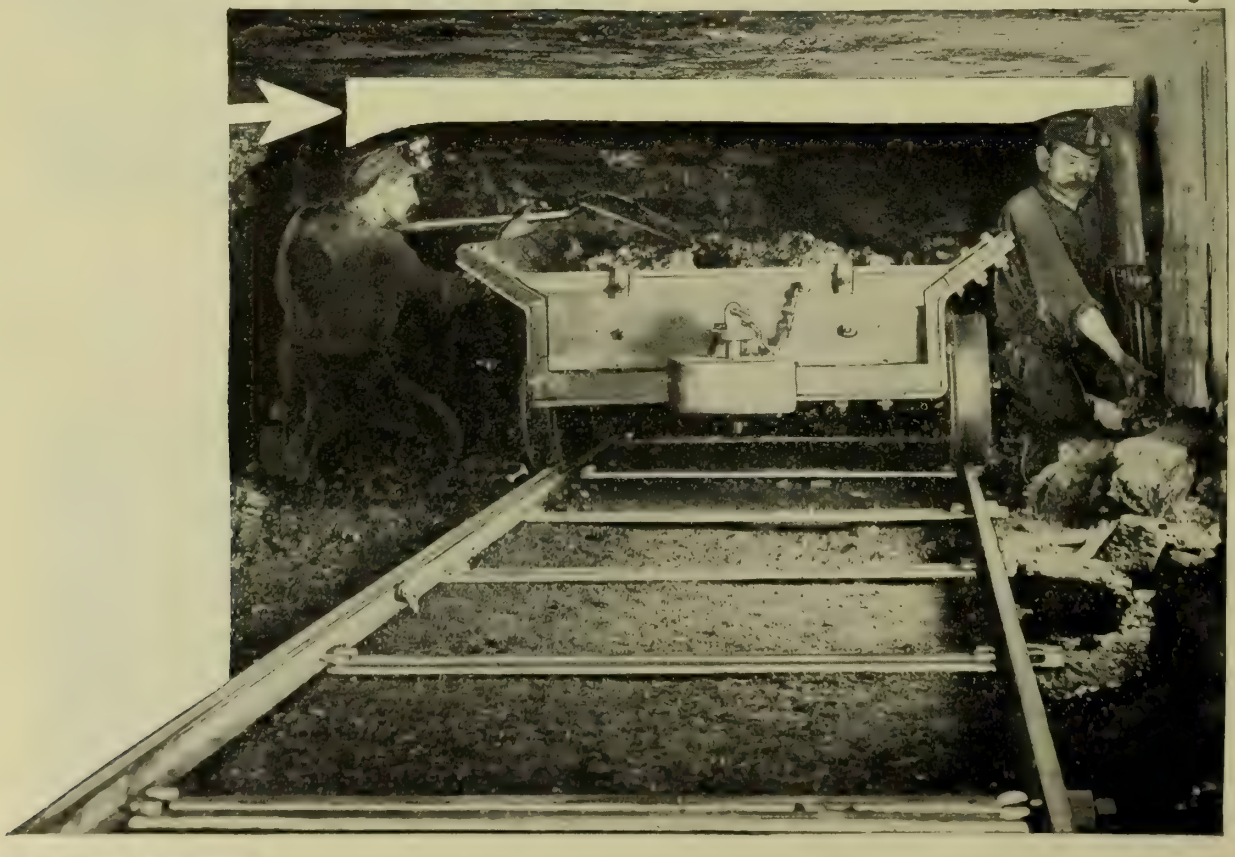
The life of a steel mine tie is very much greater than that of a wooden tie, but of course this depends upon conditions. In locations where the rooms are dry, it is reasonable to believe these ties will last ten years. Where the mine water is very sulphurous the tie would not last so long, but the life may be greatly increased by a treatment of coal tar, asphaltum or similar coating, applied by dipping the tie and fastenings therein. We are prepared to furnish ties in all sizes so coated if desired.

The tie is popular with the miners because it is lighter to carry from place to place and easier to put together.

The Slick Tie gives maximum head room. Note the arrow in the cut below showing the two and one-half inches extra head room obtained by using the Slick Steel Ties, because the steel tie is one-half inch thick, while a wooden tie is at least three inches. The benefits derived from the extra head room, in low rooms and thin seam workings are, easier shoveling, bigger lumps, and cars of larger capacity.

Taking into consideration the length of service, the steel tie is cheaper than wooden ties in practically every locality.

Send for the booklet which tells in more detail why steel ties are better than wooden. Write our nearest district sales office for prices.





HYDRAULIC SECTION

Engineering Data

Specification Data for Pumps.
Table of Capacities of Pumps.
Selection of Proper size Motor for your pump.
Theoretical Horse Power required to raise water to different heights.
Friction of Water in Wrought and Cast Iron Pipes.
Friction of Standard Pipe Fittings.
Capacity of Cylindrical Vessels.
Table—Standard Sizes of Wrought Iron Pipe.
Table—Standard Sizes of Wrought Iron Welded Tubes.
Comparative Table of Pipe Capacities.

The following manufacturers have catalogue descriptions in this section:

Advance Pump & Compressor Co.
Alberger Pump & Condenser Co.
Aldrich Pump Co.
American Steam Pump Co.
Boyts-Porter & Co.
Byers, A. M., Co.
Cameron, A. S., Steam Pump Works.
Cast Iron Pipe Makers.
Columbus Steam Pump Works Co.
Dayton Turbine Pump Co.
Deming Co.
DuBois Iron Works.
Epping-Carpenter Pump Co .
Fairbanks, Morse & Co.
Fairmont Mining Machinery Co.
General Electric Co.
Goulds Mfg. Co.
Highland Chemical Products Co.
Michigan Pipe Co.
Morris Machine Works.
National Transit Co.
Platt Iron Works.
Pneumelectric Machine Co.
Wagner Steam Pump Co.
Westinghouse Electric & Mfg. Co.

For additional descriptions of Hydraulic Equipment, not appearing in this section, refer to Index of Products in front of book.

When Ordering Pumps

Manufacturer wants to know:—

How many gallons you want to handle per minute.

The amount of suction lift, length and size of suction pipes. If you want to use one or more branches to suction. So state.

The amount of discharge lift. Length and size of discharge pipe. If other pumps use same discharge line, so state, giving approximate quantity of water passing through line.

Will the water contain any solids? Give characteer of water and state preference as to metal to be used in water end of pump.

If steam is to be used, give boiler pressure, length, size and condition of steam line and probable pressure at the pump.

If compressed air is to be used, give air pressure at the pump.

If electricity is to be used, give voltage and state alternating or direct current. If alternating, state if single phase, two or three phase, the voltage and number of cycles. Does voltage vary materially?

Courtesy Harris Pump & Supply Co.

TABLE OF CAPACITY OF PUMPS

Diam. of Cyl., In.	Area in Sq. In.	Length of Stroke in Inches															
		2	3	4	5	6	8	10	12	14	15	16	18	20	24	30	36
		Capacity per Stroke in Gallons, or Decimal Part Thereof															
¾	.442	.004	.006	.008	.01	.011	.015	.019	.023	.027	.029	.031	.034	.038	.046	.057	.068
⅞	.601	.005	.008	.01	.013	.016	.021	.026	.031	.036	.039	.042	.047	.052	.062	.078	.094
1	.785	.007	.01	.014	.017	.02	.027	.034	.041	.048	.051	.054	.061	.068	.082	.102	.122
1⅛	.994	.009	.013	.017	.022	.026	.034	.043	.062	.06	.065	.069	.077	.086	.103	.129	.154
1¼	1.227	.011	.016	.021	.027	.032	.043	.053	.064	.074	.08	.085	.096	.106	.127	.159	.192
1⅜	1.485	.013	.019	.026	.032	.039	.051	.064	.077	.089	.096	.103	.116	.128	.154	.192	.232
1½	1.767	.015	.023	.031	.038	.046	.061	.077	.092	.107	.115	.122	.138	.153	.184	.231	.276
1¾	2.405	.021	.031	.042	.052	.063	.083	.104	.125	.146	.156	.167	.187	.208	.25	.312	.374
2	3.142	.027	.041	.054	.068	.082	.109	.136	.163	.19	.204	.218	.245	.272	.326	.408	.49
2¼	3.976	.034	.052	.069	.086	.103	.138	.172	.206	.241	.258	.275	.31	.344	.413	.516	.62
2½	4.909	.043	.064	.085	.106	.128	.17	.213	.255	.298	.319	.34	.383	.425	.51	.639	.766
2¾	5.94	.051	.077	.103	.129	.154	.206	.257	.309	.36	.386	.411	.463	.514	.617	.771	.926
3	7.069	.061	.092	.122	.153	.184	.245	.306	.367	.428	.459	.49	.551	.612	.734	.918	1.102
3¼	8.296	.072	.108	.144	.18	.215	.287	.359	.431	.503	.539	.575	.647	.718	.862	1.077	1.294
3½	9.621	.083	.125	.167	.208	.25	.333	.417	.5	.583	.625	.666	.75	.833	1.	1.251	1.50
3¾	11.045	.095	.143	.191	.239	.287	.382	.478	.574	.669	.717	.765	.861	.956	1.147	1.434	1.722
4	12.566	.109	.163	.218	.272	.326	.435	.544	.653	.762	.816	.87	.979	1.088	1.306	1.632	1.958
4¼	14.186	.123	.184	.246	.307	.368	.491	.614	.737	.86	.921	.982	1.105	1.228	1.473	1.842	2.21
4½	15.904	.138	.207	.275	.344	.413	.551	.689	.826	.964	1.033	1.102	1.239	1.377	1.652	2.067	2.478
4¾	17.721	.153	.23	.307	.384	.46	.614	.767	.92	1.073	1.15	1.227	1.38	1.534	1.84	2.301	2.76
5	19.635	.17	.255	.34	.425	.51	.68	.85	1.02	1.19	1.275	1.36	1.53	1.7	2.04	2.55	3.06
5¼	21.648	.187	.281	.375	.469	.562	.75	.937	1.124	1.311	1.405	1.499	1.686	1.874	2.248	2.811	3.372
5½	23.758	.206	.309	.411	.514	.617	.823	1.029	1,234	1.44	1.543	1.646	1.851	2.057	2.468	3.087	3.702
5¾	25.967	.225	.337	.45	.562	.674	.899	1.124	1,348	1.573	1.686	1.798	2.022	2.248	2.696	3.372	4.044

Diam. of Cyl., In.	Area in Sq. In.	Length of Stroke in Inches															
		2	3	4	5	6	8	10	12	14	15	16	18	20	24	30	36
		Capacity per Stroke in Gallons, or Decimal Part Thereof															
6	28.274	.245	.367	.49	.612	.734	.979	1.224	1.469	1.714	1.836	1.958	2.203	2.448	2.938	3.672	4.406
6¼	30.68	.266	.398	.531	.664	.797	1.062	1.328	1.593	1.859	1.992	2.124	2.39	2.656	3.186	3.984	4.78
6½	33.183	.287	.431	.574	.718	.861	1.149	1.436	1.796	2.011	2.155	2.298	2.589	2.873	3.447	4.308	5.178
6¾	35.785	.309	.465	.62	.775	.929	1.239	1.549	1.858	2.168	2.323	2.479	2.788	3.098	3.716	4.647	5.576
7	38.485	.333	.5	.666	.833	1.	1.333	1.666	1.999	2.332	2.499	2.666	2.999	3.332	3.998	4.998	5.998
7¼	44.179	.383	.574	.765	.956	1.148	1.53	1.913	2.295	2.678	2.869	3.06	3.443	3.825	4.59	5.739	6.886
7½	47.173	.408	.613	.817	1.021	1.225	1.633	2.042	2.45	2.858	3.063	3.266	3.674	4.084	4.9	6.126	7.348
8	50.266	.435	.653	.87	1.088	1.306	1.741	2.176	2.611	3.046	3.264	3.482	3.917	4.352	5.222	6.528	7.834
8¼	56.745	.49	.735	.98	1.225	1.47	1.96	2.45	2.94	3.43	3.675	3.92	4.41	4.9	5.88	7.35	8.82
8½	60.132	.52	.78	1.04	1.3	1.56	2.08	2.6	3.12	3.64	3.9	4.16	4.68	5.2	6.24	7.8	9.36
9	63.617	.551	.826	1.101	1.377	1.652	2.203	2.754	3.305	3.856	4.131	4.406	5.057	5.508	6.61	8.262	10.114
9¼	70.882	.612	.918	1.224	1.53	1.83	2.448	3.06	3.672	4.284	4.59	4.896	5.51	6.12	7.344	9.18	11.02
9½	74.662	.646	.97	1.293	1.616	1.939	2.586	3.232	3.878	4.525	4.848	5.171	5.818	6.464	7.757	9.696	11.636
10	78.54	.68	1.02	1.36	1.7	2.04	2.72	3.4	4.08	4.76	5.1	5.44	6.12	6.8	8.16	10.2	12.24
11	95.033	.823	1.234	1.645	2.057	2.464	3.291	4.114	4.937	5.76	6.171	6.582	7.405	8.228	9.874	12.342	14.81
11½	103.869	.90	1.351	1.80	2.252	2.701	3.60	4.505	5.406	6.30	6.75	7.2	8.1	9.	10.8	13.515	16.2
12	113.098	.979	1.468	1.958	2.448	2.938	3.917	4.896	5.875	6.854	7.344	7.833	8.813	9.792	11.75	14.688	17.626
13	132.733	1.149	1.723	2.297	2.872	3.445	4.596	5.745	6.894	8.042	8.616	9.192	10.34	11.49	13.78	17.235	20.68
14	153.938	1.332	1.998	2.665	3.331	3.997	5.33	6.663	7.994	9.328	9.993	10.66	11.99	13.32	15.98	19.989	23.98
14½	165.13	1.43	2.142	2.856	3.574	4.284	5.718	7.148	8.578	10.0	10.71	11.424	12.852	14.28	17.136	21.444	25.704
15	176.715	1.529	2.294	3.059	3.824	4.589	6.119	7.649	9.178	10.7	11.47	12.23	13.76	15.29	18.35	22.947	27.52
16	201.062	1.74	2.61	3.48	4.35	5.22	6.96	8.703	10.44	12.18	13.05	13.92	15.66	17.40	20.88	26.109	31.32
18	254.47	2.202	3.303	4.404	5.505	6.606	8.808	11.01	13.21	15.41	16.51	17.61	19.81	22.02	26.42	33.03	39.72
20	314.16	2.720	4.08	5.44	6.8	8.16	10.88	13.6	16.32	19.04	20.4	21.76	24.48	27.2	32.64	40.8	48.96

Courtesy Goodman Mfg. Co.

To Select Proper Size Motor for Your Pump

Remember that feet elevation given in table includes three distinct elevations. First. Actual difference in elevation of water to be pumped at its lowest point and highest point to which water is elevated. Second. The equivalent of vertical feet necessary to overcome the friction caused by water handled in passing through all the line, including suction and discharge lines, the pump itself and all obstructions, including elbows, bends and gate valves. See Table for friction of water in pipes. Figure five elbows the same as 100 fet of straight pipe. Use gate valves instead of globe valve for water wherever possible. Use swing checks instead of poppet checks. Third. Velocity heads. This is usually so small in mine srvice as to be neglected in calculations.

To find horse-power required for a piston power pump, multiply theoretical horse-power shown in table by 1½ to 2. For triplex pumps up to 100 feet multiply by 1½ to 2. For elevations 100 to 200 feet—1½; for elevations 200 to 400 feet, multiply by 1.4.

For deep well pumps, multiply by 2 to 3.

For centrifugal pumps, multiply by 2 to 2½.

In centrifugal pumps remember that the speed of motor and pump should be right for the elevation and when speeded too high or put on a lower elevation, more water will be pumped and much more power required.

THEORETICAL HORSE POWER REQUIRED TO RAISE WATER TO DIFFERENT HEIGHTS.

Elevation Feet	5	10	15	20	25	30	35	40	45	56	60
Gallons per Min.											
5	.006	.012	.019	.025	.031	.037	.044	.05	.06	.06	.07
10	.012	.025	.037	.050	.062	.075	.087	.10	.11	.12	.15
15	.019	.037	.056	.075	.094	.112	.131	.15	.17	.19	.22
20	.025	.050	.075	.100	.125	.150	.175	.20	.22	.25	.30
25	.031	.062	.093	.125	.156	.187	.219	25	.28	.31	.37
30	.037	.075	.112	.150	.187	.225	.262	.30	.34	.37	.45
35	.043	.087	.131	.175	.219	.262	.306	.35	.39	.44	.52
40	.050	.100	.150	.200	.250	.300	.350	.40	.45	.50	.60
45	.056	.112	.168	.225	.281	.337	.394	.45	.51	.56	.67
50	.062	.125	.187	.250	.312	.375	.437	.50	.56	.62	.75
60	.075	.150	.225	.300	.375	.450	.525	.60	.67	.75	.90
75	.093	.187	.281	.375	.469	.562	.656	.75	.84	.94	1.12
90	.112	.225	.337	.450	.562	.675	.787	.90	1.01	1.12	1 35
100	.125	.250	.375	.500	.625	.750	.875	1.00	1.12	1.25	1.50
125	.156	.312	.469	.625	.781	.937	1.094	1.25	1.41	1.56	1.87
150	.187	.375	.562	.750	.937	1.125	1.312	1.50	1.69	1.87	2.25
175	.219	.437	.656	.875	1.093	1.312	1.531	1.75	1.97	2.19	2.62
200	.250	.500	.750	1.000	1.250	1.500	1.750	2.00	2.25	2.50	3.00
250	.312	.625	.937	1.250	1.562	1.875	2.187	2.50	2.81	3.12	3.75
300	.375	.750	1.125	1.500	1.875	2.250	2.625	3.00	3.37	3.75	4.50
350	.437	.875	1.312	1.750	2.187	2.625	3.062	3.50	3.94	4.37	5.25
400	.500	1.000	1.500	2.000	2.500	3.000	3.500	4.00	4.50	5.00	6.00
500	.625	1.250	1.875	2.500	3.125	3.750	4.375	5.00	5.62	6.25	7.50

Feet Elevation	75	90	100	125	150	175	200	250	300	350	400
Gallons per min.											
5	.09	.11	.12	.16	.19	.22	.25	.31	.37	.44	.50
10	.19	.22	.25	.31	.37	.44	.50	.62	.75	.87	1.00
15	.28	.34	.37	.47	.56	.66	.75	.94	1.12	1.31	1.50
20	.37	.45	.50	.62	.75	.87	1.00	1.25	1.50	1.75	2.00
25	.47	.56	.62	.78	.94	1.09	1.25	1.56	1.87	2.19	2.50
30	.56	.67	.75	.94	1.12	1.31	1.50	1.87	2.25	2.62	3.00
35	.66	.79	.87	1.08	1.31	1.53	1.75	2.19	2.62	3.06	3.50
40	.75	.90	1.00	1.25	1.50	1.75	2.00	2.50	3.00	3.50	4.00
45	.84	1.01	1.12	1.41	1.69	1.97	2 25	2.81	3.37	3.94	4.50
50	.94	1.12	1.25	1.56	1.87	2.19	2.50	3.12	3.75	4.37	5.00
60	1.12	1.35	1.50	1.87	2.25	2.62	3.00	3.75	4.50	5.25	6.00
75	1.40	1.69	1.87	2.34	2.81	3.28	3.75	4.69	5.62	6.56	7.50
90	1.68	2.02	2.25	2.81	3.37	3.94	4.50	5.62	6.75	7.87	9.00
100	1.87	2.25	2.50	3.12	3.75	4.37	5.00	6.25	7.50	8.75	10.00
125	2.34	2.81	3.12	3.91	4.69	5.47	6.25	7.81	9.37	10.94	12.50
150	2.81	3.37	3.75	4.69	5.62	6.56	7.50	9.37	11.25	13.12	15.00
175	3.28	3.94	4.37	5.47	6.56	7.66	8.75	10.94	13.12	15.31	17.50
200	3.75	4.50	5.00	6.25	7.50	8.75	10.00	12.50	15.00	17.50	20.00
250	4.69	5.62	6.25	7.81	9.37	10.94	12.50	15.72	18.75	21.87	25.00
300	5.62	6.75	7.50	9.37	11.25	13.12	15.00	18.75	22.50	26.25	30.00
350	6.56	7.87	8.75	10.94	13.12	15.31	17.50	21.87	26.25	30.62	35.00
400	7.50	9.00	10.00	12.50	15.00	17.50	20.00	25.00	30.00	35.00	40.00
500	9.37	11.25	12.50	15.62	18.75	21.87	25.00	31.25	37.50	43.75	50.00

Courtesy Harris Pump & Supply Co.

Importance of Considering the Friction of Water in Pipes

In estimating the total head against which a given quantity of water is to be delivered particular attention is called to the importance of considering the friction of water in pipes, elbows and valves. In writing for estimates the length and size of suction and discharge pipes, and the number of tees, ells and valves must be given.

The importance of using large enough pipes thereby saving power is illustrated as follows: 500 gallons delivered per minute through a 4-inch pipe (see friction table) means a friction head of 170.53 feet for each 1000 feet of pipe; the same quantity delivered through an 8-inch pipe produces a friction head of but 5.64 feet per each 1000 feet of pipe.

Friction of Water in Wrought and Cast Iron Pipes

Frictional heads at given rates of discharge in clean wrought iron pipe. (Inside Diam.) for each 100 feet of length

U. S. Gal. per Minute	U. S. Gal. per 24 Hours	¾ In. Pipe		1 In. Pipe		1¼ In. Pipe		1½ In. Pipe		2 In. Pipe		2½ In. Pipe		3 In. Pipe	
		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd	
		Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.
5	7200	7 59	3 30	1 93	.84	.71	.31	.27	.12	.	.	.	.	.	.....
10	14400	29.90	13 00	10 26	3.16	2 41	1 05	1 08	.47	...	....	....	....	....	.....
15	21600	66 01	28 70	16 05	6.98	5.47	2 38	2.23	.97	....	....	..	...	.....	.....
20	28800	115.92	50.40	28 29	12.30	9.36	4.07	3.81	1.66	.....	....	....	...	....	.....
25	36000	.....	.....	43 70	19.00	14.72	6.40	5 02	2 62	1.18	.51	....	....	....	.....
30	43200	.....	.....	68 25	27.50	21 04	9.15	8.62	3.75	2.09	.91	.....	....	....	.....
35	50400	.....	.....	85 10	37.00	28 52	12.40	11.61	5.05	2 76	1.20	.....	.....	.....	.....
40	57600	.....	.....	110.40	48.00	37.03	16 10	14.99	6.52	3.68	1.60	1.19	.52	.....	.....
45	64800	....	....	.....	.....	46.46	20.20	18.74	8.15	4 60	2 00	1.49	.65	.....	.....
50	72000	.....	.....	.....	.....	57.27	24 90	23.00	10 00	5.61	2.44	1 86	.81	.80	.35
75	108000	.....	.....	.....	.....	129.00	56.10	51.52	22.40	12.23	5 32	4 14	1 80	1.70	.74
100	144000	.....	.....	.....	.....	.....	.....	89.70	39 00	21 75	9.46	7.36	3.20	3.01	1.31
125	180000	....	.....	.....	.....	.....	...	.....	.....	34 27	14 90	11 24	4.89	4.57	1.99
150	216000	.....	.....	.....	.....	.....	.....	.....	.....	48 76	21.20	16.10	7 00	6 55	2 85
175	252000	...	.....	.....	.....	.....	.....	.....	.....	64 63	28.10	21.75	9 46	8.85	3.85
200	288000	.....	.....	.....	.....	.....	.....	.....	.....	86.25	37.50	28.68	12.47	11.54	5.02
250	360000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45.21	19.66	17 84	7.76
300	432000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64.53	28.06	25.76	11.20
350	504000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	34.96	15.20
400	576000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44.85	19.50
450	648000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	57.50	25.00
500	720000	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	70 84	30.80

Frictional heads at given rates of discharge in clean cast iron pipes for each 1000 feet of length.

U. S. Gal. per Minute	U. S. Gal. per 24 Hours	4 In. Pipe		5 In. Pipe		6 In. Pipe		8 In. Pipe		10 In. Pipe		12 In. Pipe		14 In. Pipe	
		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd	
		Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs	Feet	Lbs.
50	72000	2.01	.87	.67	.29	.32	.14	.....	....	....	....	....	....	...	.....
100	144000	7.36	3 19	2 61	1.14	1.08	.47	...	....	....	....	....	....	.....	.....
125	180000	12.19	5 30	4 07	1.77	1 68	.73	....	....	....	....	....	....	.....	.....
150	216000	16 05	6 95	5 86	2 34	2 28	.99	....	.....	.	....	....	....	....	.....
200	288000	28 09	12.17	10 32	4 48	3.92	1.70	1.01	.44	.....	....	....	....	....	.....
250	360000	43 47	18 83	16.24	7 08	6.00	2.60	1.52	.66	.....	....	....	....	...	.....
300	432000	62 20	26 94	23.40	10.20	8.52	3 69	2 13	.92	.75	.32	.....	.....	.....	.....
400	516000	109 68	47.50	42 52	18.52	14 89	6.45	3 68	1 59	1.27	.55	.....	.....	.....	.....
500	720000	170.53	73.87	64 90	28.20	23.01	9 97	5 64	2.44	1 93	.84	.81	.35	.40	.17
600	864000	....	.....	90 20	39.30	32.89	14 25	8.03	3.48	2 72	1.18	1 14	.49	.55	.24
700	1008000	.....	.....	126.90	55.10	44.54	19.08	10 83	4.69	3 66	1 58	1.52	.66	.73	.32
800	1152000	.....	.....	.....	.....	57.95	25.10	14.05	6 08	4.73	2.05	1.96	.85	.94	.41
900	1296000	.....	.....	.....	.....	73.12	31.67	17 68	7 69	5 93	2.57	2 45	1.06	1.17	51
1000	1440000	.....	.....	.....	.....	90.05	38 99	21.74	9 41	7 28	3 15	3.00	1.30	1 43	62
1200	1728000	....	.....	.....	.....	.....	.....	31 10	13.47	10 38	4.50	4 26	1 85	2.02	.88
1400	2016000	.....	.....	.....	.....	.....	.....	42 13	18.25	14.02	6 07	5 74	2.49	2.72	1 18
1600	2304000	.....	.....	.....	.....	.....	.....	54.84	23.75	18.22	7.89	7.44	3 22	3 51	1 52
1800	2592000	.....	.....	.....	.....	.....	.....	69.22	29 98	22 96	9 95	9 36	4 06	4 41	1 91
2000	2880000	.....	.....	.....	.....	.....	.....	85.27	36 93	28 25	12 34	11.50	5 00	5 41	2 34
2500	3600000	.....	.....	.....	.....	.....	.....	.....	....	43 87	19 00	17 82	7.72	8.35	3 62
3000	4320000	.....	.....	.....	.....	.....	.....	.....	....	62.92	27.25	25.51	11.05	11.98	5 17
3500	5040000	.....	.....	....	.....	.....	.....	.....	.....	.....	.....	34.58	14 98	16 14	6 99
4000	5760000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21 00	9 10
4500	6480000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26.49	11 47

Friction of Water in Cast Iron Pipes—(Continued)

Frictional heads at given rates of discharge in clean cast iron pipes for each 1000 feet of length.

U. S. Gal. per Minute	U. S. Gal. per 24 Hours	16 In. Pipe		18 In. Pipe		20 In. Pipe		24 In. Pipe		30 In. pipe		36 In. Pipe		42 In. Pipe	
		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd		Friction hd	
		Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.	Feet	Lbs.
500	720000	.22	.09	....	....	....	....	....	....	....	....	....	....	....	.....
1000	1440000	.76	.34	.44	.19	.....	.....	.....	.....	...	....	....	.....	....	.....
1500	2160000	1.63	.71	.93	.40	.56	.24	.....	.....	....	....	....	....	....	.....
2000	2880000	2.28	1 22	1.60	.69	.96	.42	.41	.18	.....	.....	.....	.....	.....	.....
2500	3600000	4.34	1.88	2.45	1.06	1.47	.64	.62	.27	....	....	.....	.....	....	....
3000	4320000	6.19	2 68	3.48	1.51	2.09	.90	.87	.38	.80	.18	.....	....	...	.....
3500	5040000	8.37	3.63	4.70	2.03	2.81	1 22	1.16	.50	.40	17	.....	.....	.....	.....
4000	5760000	10.87	4.71	6.09	2.64	3.64	1.58	1.50	.65	.52	.22	.....	.....	.....	.....
4500	6480000	13.70	5.93	7 67	3.32	4.58	1.98	1 88	82	.64	.28	.....	.....	.....	.....
5000	7200000	16.85	7.30	9 43	4.08	5 62	2 43	2.31	1 00	.78	.34	.33	.14	....	.....
6000	8640000	.....	.....	13.49	5.84	8 03	3.43	3 28	1 42	1 11	.48	.46	.20	.....	.....
7000	10080000	....	.....	....	.....	10.86	4.71	4.43	1.92	1 49	.65	.62	.27	.....	.....
8000	11520000	.....	.....	.....	.....	.....	.....	5.75	2.49	1.93	.84	.80	.35	.....	.....
9000	12960000	.....	.....	.....	.....	.....	.....	7.25	3 14	2.43	1.05	1 00	.43	.....	.....
10000	14400000	.....	.....	.....	.....	.....	.....	.....	.....	2 98	1.29	1.23	.53	.63	.27
11000	15840000	.....	.....	.....	.....	.....	.....	.....	.....	3 59	1.55	1.47	.64	.76	.33
12000	17280000	.....	.....	.....	.....	.....	.....	.....	.....	4 25	1.84	1 74	.75	.91	.40
13000	18720000	.....	.....	.....	.....	.....	.....	.....	.....	4 97	2.15	2.03	.88	1 09	.47
14000	20160000	.....	.....	.....	.....	.....	.....	.....	.....	5.75	2.49	2 35	1.02	1.25	.54
15000	21600000	.....	.....	.....	.....	.....	.....	.....	.....	6.58	2 85	2 69	1.17	1.43	.62
16000	23040000	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	3 04	1 32	1 62	.71
17000	24480000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 43	1.49	1.84	.80
18000	25920000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3 83	1.66	2.07	.90
20000	28800000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4 71	2.04	2 55	1.11

Friction of Standard Pipe Fittings

The following equivalent length of straight pipe should be added for each fitting in figuring friction:

Size of Fittings	¾	1	1¼	1½	2	2½	3	4	5	6
Elbows	5	5	6	7	7	10	12	18	25	30
Return Bends	10	10	12	14	14	20	24	36	50	60
Globe Valves	6	6	7	8	8	12	24	30	40	50

Owing to the burr (caused by cutting the pipe with wheel cutter) obstructing the flow in the smaller pipe, it is advisable, unless the burrs are reamed out, to multiply the above figures by 3 for ¾ and 1 inch fittings and by 2 for 1¼ 1½ and 2 inch fittings.

Friction Loss in Pounds Pressure

Friction loss in pounds pressure per square inch for each 100 foot length in different size clean iron pipe, discharging given quantities per minute.

Gallons per Min.	SIZES OF PIPES—INSIDE DIAMETER.																	
	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.
5	3.3	.84	.31	.12	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	13.0	3.16	1.05	.47	.12	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	28.7	6.98	2.38	.97	.27	.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	50.4	12.3	4.07	1.66	.42	.13	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
25	78.0	19.0	6.40	2.62	.67	.21	.10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30	.....	27.5	9.15	3.75	.91	.30	.12	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
35	.....	37.0	12.4	5.05	1.26	.42	.14	.05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
40	.....	48.0	16.1	6.52	1.60	.51	.17	.06	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45	.....	.....	20.2	8.15	2.01	.62	.27	.07	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
50	.....	.....	24.9	10.0	2.44	.81	.35	.09	.03	.....	.....	.....	.....	.....	.....	.....	.....	.....
75	.....	.....	56.1	22.4	5.32	1.80	.74	.21	.06	.03	.....	.....	.....	.....	.....	.....	.....	.....
100	.....	.....	.....	39.0	9.46	3.20	1.31	.33	.12	.05	.....	.....	.....	.....	.....	.....	.....	.....
125	.....	.....	.....	.....	14.9	4.89	1.99	.51	.17	.07	.....	.....	.....	.....	.....	.....	.....	.....
150	.....	.....	.....	.....	21.2	7.0	2.85	.69	.25	.10	.....	.02	.....	.....	.....	.....	.....	.....
175	.....	.....	.....	.....	28.1	9.46	3.85	.95	.34	.14	.....	.03	.....	.....	.....	.....	.....	.....
200	.....	.....	.....	.....	37.5	12.47	5.02	1.22	.42	.17	.08	.05	.01	.....	.....	.....	.....	.....
250	.....	.....	.....	.....	.....	19.66	7.76	1.89	.65	.26	.13	.07	.03	.01	.....	.....	.....	.....
300	.....	.....	.....	.....	.....	28.06	11.2	2.66	.93	.37	.18	.09	.04	.....	.....	.....	.....	.....
350	.....	.....	.....	.....	.....	.....	15.2	3.65	1.28	.50	.25	.12	.05	.02	.....	.....	.....	.....
400	.....	.....	.....	.....	.....	.....	19.5	4.73	1.68	.65	.32	.16	.06	.....	.....	.....	.....	.....
450	.....	.....	.....	.....	.....	.....	25.	6.01	2.10	.81	.42	.20	.07	.03	.....	.....	.....	.....
500	.....	.....	.....	.....	.....	.....	30.8	7.43	2.70	.96	.49	.25	.09	.04	.017	.009	.015	.....
600	.....	.....	.....	.....	.....	.....	.....	10.6	3.45	1.72	.86	.348	.13	.05	.24	.....	.....	.....
750	.....	.....	.....	.....	.....	.....	.....	.....	5.40	2.21	1.11	.53	.18	.08	.038	.....	.....	.....
1000	.....	.....	.....	.....	.....	.....	.....	.....	9.60	3.88	1.91	.94	.32	.13	.062	.036	.02	.012
1250	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.46	.49	.20	.....	.....	.....	.....
1500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.09	.70	.29	.135	.071	.040	.....
1750	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.95	.38	.....	.....	.....	.....
2000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.23	.49	.234	.123	.071	.042
2500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.77	.362	.188	.107	.....
3000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.11	.515	.267	.15	.091
3500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.697	.365	.204	.124
4000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.91	.472	.264	.158
4500	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.593	.33	.200
5000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.730	.41	.244
*	$\sqrt{5}$	1	1.75	2.76	5.66	9.88	15.59	32	55.9	88.2	129.6	181.	316.2	498.8	733.4	1024	1375	1760

* Comparative Discharging Power of Pipes

Remember, doubling the quantity of water forced through a line **doubles** the **velocity** and makes **four times the friction.**

In figuring friction of water in elbows, assume five ordinary elbows the equivalent of 100 feet of straight pipe.

One pound of pressure is the same as the pressure of water 2.3 feet high.

CAPACITY OF CYLINDRICAL VESSELS.

CYLINDRICAL VESSELS, TANKS, CISTERNS, ETC.

Diameter in Feet and Inches, Area in Square Feet, and U. S. Gallons Capacity for One Foot in Depth.

1 gallon = 231 cubic inches = $\frac{1 \text{ cubic foot}}{7.4805}$ = 0.13368 cubic feet.

Diam.	Area.	Gals.	Diam.	Area.	Gals.	Diam.	Area.	Gals.	Diam.	Area.	Gals.
Ft. In.	Sq. ft.	1 foot depth.	Ft. In.	Sq. ft.	1 foot depth.	Ft. In.	Sq. ft.	1 foot depth.	Ft. In.	Sq. ft.	1 foot depth.
1	.785	5.87	5 8	25.22	188.66	19	283.53	2120.9	1	1	1
1 1	.922	6.89	5 9	25.97	194.25	19 3	291.04	2177.1	1	1	1
1 2	1.069	8.00	5 10	26.73	199.93	19 6	298.65	2234.0	1	1	1
1 3	1.227	9.18	5 11	27.49	205.67	19 9	306.35	2291.7	1	1	1
1 4	1.396	10.44	6	28.27	211.51	20	314.16	2350.1	1	1	1
1 5	1.576	11.79	6 3	30.68	229.50	20 3	322.05	2409.2	1	1	1
1 6	1.767	13.22	6 6	33.18	248.33	20 6	330.06	2469.1	1	1	1
1 7	1.969	14.73	6 9	35.78	267.69	20 9	338.16	2529.6	1	1	1
1 8	2.182	16.32	7	38.48	287.88	21	346.36	2591.0	1	1	1
1 9	2.405	17.99	7 3	41.28	308.81	21 3	354.66	2653.0	1	1	1
1 10	2.640	19.75	7 6	44.18	330.49	21 6	363.05	2715.8	1	1	1
1 11	2.885	21.58	7 9	47.17	352.88	21 9	371.54	2779.3	1	1	1
2	3.142	23.50	8	50.27	376.01	22	380.13	2843.6	1	1	1
2 1	3.409	25.50	8 3	53.46	399.88	22 3	388.82	2908.6	1	1	1
2 2	3.687	27.58	8 6	56.75	424.49	22 6	397.61	2974.3	1	1	1
2 3	3.976	29.74	8 9	60.13	449.82	22 9	406.43	3040.8	1	1	1
2 4	4.276	31.99	9	63.62	475.89	23	415.48	3108.0	1	1	1
2 5	4.587	34.31	9 3	67.30	502.70	23 3	424.56	3175.9	1	1	1
2 6	4.909	36.72	9 6	70.88	530.34	23 6	433.74	3244.6	1	1	1
2 7	5.241	39.21	9 9	74.66	558.51	23 9	443.01	3314.0	1	1	1
2 8	5.585	41.78	10	78.54	587.32	24	452.39	3384.1	1	1	1
2 9	5.940	44.43	10 3	82.52	617.30	24 3	461.86	3455.0	1	1	1
2 10	6.305	47.16	10 6	86.59	647.74	24 6	471.44	3526.6	1	1	1
2 11	6.681	49.98	10 9	90.76	678.93	24 9	481.11	3598.9	1	1	1
3	7.069	52.88	11	95.03	710.90	25	490.87	3672.0	1	1	1
3 1	7.467	55.86	11 3	99.40	743.58	25 3	500.74	3745.8	1	1	1
3 2	7.876	58.92	11 6	103.87	776.99	25 6	510.71	3820.3	1	1	1
3 3	8.296	62.06	11 9	108.43	811.14	25 9	520.77	3895.6	1	1	1
3 4	8.727	65.28	12	113.10	846.03	26	530.93	3971.6	1	1	1
3 5	9.168	68.58	12 3	117.86	881.65	26 3	541.19	4048.4	1	1	1
3 6	9.621	71.97	12 6	122.72	918.00	26 6	551.55	4125.9	1	1	1
3 7	10.085	75.44	12 9	127.68	955.09	26 9	562.00	4204.1	1	1	1
3 8	10.559	78.99	13	132.73	992.91	27	572.56	4283.0	1	1	1
3 9	11.045	82.62	13 3	137.89	1031.5	27 3	583.21	4362.7	1	1	1
3 10	11.541	86.33	13 6	143.14	1070.8	27 6	593.96	4443.1	1	1	1
3 11	12.048	90.13	13 9	148.49	1110.8	27 9	604.81	4524.3	1	1	1
4	12.566	94.00	14	153.94	1151.5	28	615.75	4606.2	1	1	1
4 1	13.095	97.96	14 3	159.48	1193.0	28 3	626.80	4688.8	1	1	1
4 2	13.635	102.00	14 6	165.13	1235.3	28 6	637.94	4772.1	1	1	1
4 3	14.186	106.12	14 9	170.87	1278.2	28 9	649.18	4856.2	1	1	1
4 4	14.748	110.32	15	176.71	1321.9	29	660.52	4941.0	1	1	1
4 5	15.321	114.61	15 3	182.65	1366.4	29 3	671.96	5026.6	1	1	1
4 6	15.90	118.97	15 6	188.69	1411.5	29 6	683.49	5112.9	1	1	1
4 7	16.50	123.42	15 9	194.83	1457.4	29 9	695.13	5199.9	1	1	1
4 8	17.10	127.95	16	201.06	1504.1	30	706.86	5287.7	1	1	1
4 9	17.72	132.56	16 3	207.39	1551.4	30 3	718.69	5376.2	1	1	1
4 10	18.35	137.25	16 6	213.82	1599.5	30 6	730.62	5465.4	1	1	1
4 11	18.99	142.02	16 9	220.35	1648.4	30 9	742.64	5555.4	1	1	1
5	19.63	146.88	17	226.98	1697.9	31	754.77	5646.1	1	1	1
5 1	20.29	151.82	17 3	233.71	1748.2	31 3	766.99	5737.5	1	1	1
5 2	20.97	156.83	17 6	240.53	1799.3	31 6	779.31	5829.7	1	1	1
5 3	21.65	161.93	17 9	247.45	1851.1	31 9	791.73	5922.6	1	1	1
5 4	22.34	167.12	18	254.47	1903.6	32	804.25	6016.2	1	1	1
5 5	23.04	172.38	18 3	261.59	1956.8	32 3	816.86	6110.6	1	1	1
5 6	23.76	177.72	18 6	268.80	2010.8	32 6	829.58	6205.7	1	1	1
5 7	24.48	183.15	18 9	276.12	2065.5	32 9	842.39	6301.5	1	1	1

Reprinted from Kent's Mechanical Engineers' Pocket-book, Eighth Edition, 1910

Wrought Iron Pipe

Standard Sizes

Nominal, Inside	Diameter, Inches: Actual, Outside	Diameter, Inches: Actual, Inside	Weight, Pounds per Lineal Foot	Number of Threads per Inch	Length of Perfect Thread, Inches
⅛	.405	.270	.24	27	.19
¼	.540	.364	.42	18	.29
⅜	.675	.493	.56	18	.30
½	.840	.622	.84	14	.39
¾	1.050	.824	1.12	14	.40
1	1.315	1.048	1.67	11½	.51
1¼	1.660	1.380	2.24	11½	.54
1½	1.900	1.610	2.68	11½	.55
2	2.375	2.067	3.61	11½	.58
2½	2.875	2.468	5.74	8	.89
3	3.500	3.067	7.54	8	.95
3½	4.000	3.548	9.00	8	1.00
4	4.500	4.026	10.66	8	1.05
4½	5.000	4.508	12.34	8	1.10
5	5.563	5.045	14.50	8	1.16
6	6.625	6.065	18.76	8	1.26
7	7.625	7.023	23.27	8	1.36
8	8.625	7.981	28.18	8	1.46
9	9.625	8 937	33.70	8	1.57
10	10.75	10.02	40.06	8	1 68
11	11.75	11.00	45.02	8	1.78
12	12.75	12.00	49.00	8	1.88
13	14.00	13.25	54.00	8	2.09
14	15.00	14.25	58.00	8	2.10
15	16.00	15 25	62 00	8	2.20

Wrought Iron Welded Tubes

Extra Strong and Double Extra Strong Standard Dimensions

Size, Nominal Diameter, Inches	Actual Outside Diameter, Inches	Thickness, Inches: Extra Strong	Thickness, Inches: Double Extra Strong	Approximate Inside Diameter, Inches: Extra Strong	Approximate Inside Diameter, Inches: Double Extra Strong
⅛	.405	.100	.....	.205	.....
¼	.540	.123	.....	.294	.....
⅜	.675	.127	.....	.421	.....
½	.840	.149	.298	.542	.244
¾	1.050	.157	.314	.736	.422
1	1.315	.182	.364	.951	.587
1¼	1.660	.194	.388	1.272	.885
1½	1.900	.203	.406	1.494	1.088
2	2.375	.221	.442	1.933	1.491
2½	2.875	.280	.560	2.315	1.755
3	3.500	.304	.608	2.892	2.284
3½	4.000	.321	.642	3.358	2.716
4	4.500	.341	.682	3.818	3.136
4½	5.000	.360	.718	4.280	3.564
5	5.563	.375	.750	4.813	4.063
6	6.625	.437	.875	5.751	4.875
7	7.625	.500	.875	6.625	5.875
8	8.625	.500	.875	7.625	6.875
9	9.655	.500	.....	8.625	.....
10	10.750	.500	.....	9.750	.....
12	12.750	.500	.....	11.750	.....

Comparative Table of Pipe Capacities

Number of Smaller Pipes Equivalent to One Larger

With the same velocity of flow, the volume delivered by two pipes of different sizes is proportional to the squares of their diameters. With the same head or pressure, however, the velocity is less in the smaller pipe and the volume delivered varies about as the square root of the 5th power. The table is calculated on this basis, the figures in each column showing the number of pipes of the size at the head of that column, equivalent in capacity to one pipe of the corresponding sizes given in side columns.

Large Pipe, Diam., Ins.	Smaller Pipes, Diameters, Inches: 1	2	3	4	5	6	7	8	9	10	12	14	16	18	20	Large Pipe, Diam. Ins.
	Number to Give Same Capacity as One Large Pipe							Number to Give Same Capacity as One Large Pipe								
2	5.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
3	15.6	2.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
4	32.0	5.7	2.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4
5	55.9	9.9	3.6	1.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5
6	88.2	15.6	5.7	2.8	1.6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
7	130	22.9	8.3	4.1	2.3	1.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
8	181	32.0	11.7	5.7	3.2	2.1	1.4	.....	.....	.....	.....	.....	.....	.....	.....	8
9	243	43.0	15.6	7.6	4.3	2.8	1.9	1.3	.....	.....	.....	.....	.....	.....	.....	9
10	316	55.9	20.3	9.9	5.7	3.6	2.4	1.7	1.3	.....	.....	.....	.....	.....	.....	10
11	401	70.9	25.7	12.5	7.2	4.6	3.1	2.2	1.7	1.3	.....	.....	.....	.....	.....	11
12	499	88.2	32.0	15.6	8.9	5.7	3.8	2.8	2.1	1.6	.....	.....	.....	.....	.....	12
13	609	108	39.1	19.0	10.9	7.1	4.7	3.4	2.5	1.9	1.2	.....	.....	.....	.....	13
14	733	130	47.0	22.9	13.1	8.3	5.7	4.1	3.0	2.3	1.5	.....	.....	.....	.....	14
15	871	154	55.9	27.2	15.6	9.9	6.7	4.8	3.6	2.8	1.7	1.2	.....	.....	.....	15
16	...	181	65.7	32.0	18.3	11.7	7.9	5.7	4.2	3.2	2.1	1.4	.....	.....	.....	16
17	..	211	76.4	37.2	21.3	13.5	9.2	6.6	4.9	3.8	2.4	1.6	1.2	.....	.....	17
18	.	243	82.2	43.0	24.6	15.6	10.6	7.6	5.7	4.3	2.8	1.9	1.3	.....	.....	18
20	.	316	115	55.9	32.0	20.3	13.8	9.9	7.4	5.7	3.6	2.4	1.7	1.3	.....	20
22	.	401	146	70.9	40.6	25.7	17.5	12.5	9.3	7.2	4 6	3.1	2.2	1.7	1.3	22
24	.	499	181	88.2	50.5	32.0	21.8	15.6	11.6	8.9	5.7	3.8	2.8	2.1	1.6	24

Courtesy Goodman Mfg. Co.

ADVANCE PUMP & COMPRESSOR CO.

BATTLE CREEK, MICH., U. S. A.

Durable Pumping Machinery for Difficult Service and High Efficiency

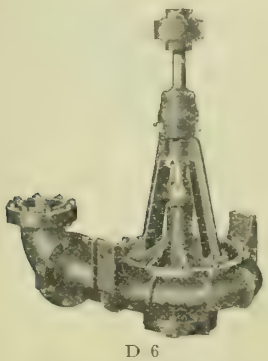
Send Us Your Pump Problems. **Secure Catalogue M-54.**

Steam-Power ----- Centrifugal ----- Electric



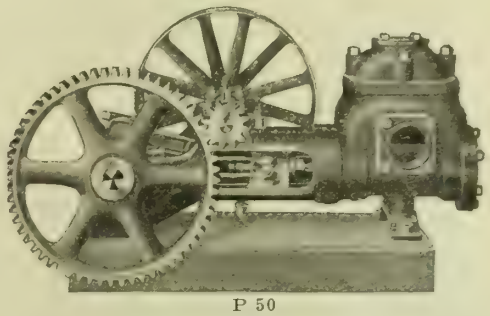
L 100

Piston Packed General Service Steam Pumps, for heavy pressures. Economical steam users.



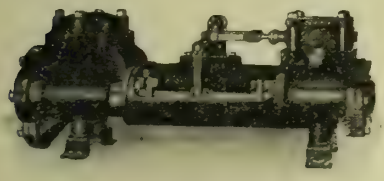
D 6

Vertical or Horizontal Centrifugals. Belted or for motor drives.



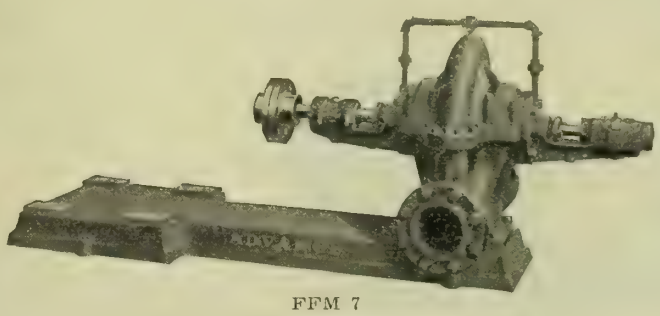
P 50

Power Pumps. Belted or motor driven. Piston or center packed.



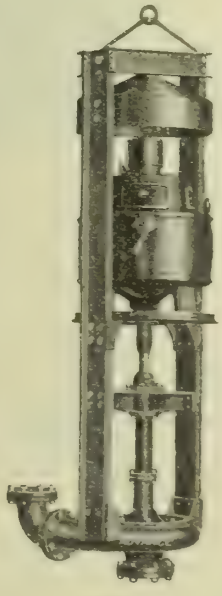
G 100

Boiler Feeders, end or side suction, piston or center packed. Capacities to 500 gallon P. M.



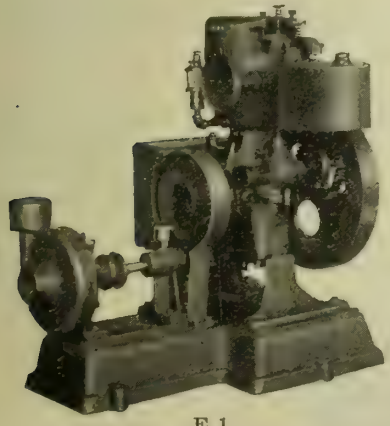
FFM 7

Centrifugal Two or Three-Stage Pumps; also Turbines. Belted or direct connected to motors. Special Pumps in these types for exacting service.



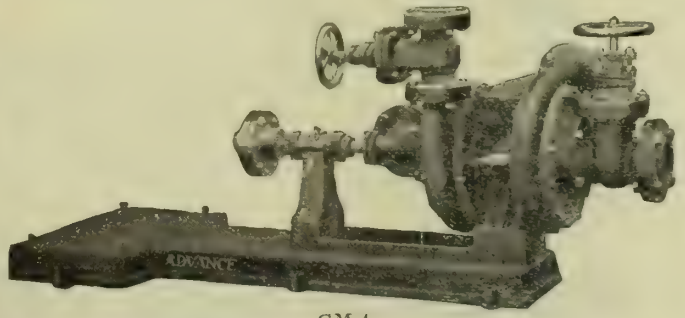
LMP 5

Sinkers. Many designs, for difficult service and high efficiency.



E 1

Gasoline Engine Driven Portable Pumps, for low heads. Several sizes. Efficient, durable.



GM 4

Centrifugal with Split Casings, any Capacity—any Head. Perfectly Balanced—High Efficiency.

Centrifugal Two or Three Stage Pumps—Also Turbines. Belted or Direct Connected to Motors. Special Pumps in these types for exacting service.

Alberger Pump and Condenser Company

140 Cedar Street, New York

BRANCH OFFICES:
CHICAGO, 115 W. Monroe Street; PITTSBURGH, Farmers' Bank Building;
BOSTON, 88 Broad Street; ST. LOUIS, Chemical Building;
SAN FRANCISCO, 503 Market Street;
ATLANTA, Healey Building.

Works: Newburgh, New York

Products

Centrifugal Turbine and Volute Pumps; Steam Turbines; Surface, Low Head Jet and Barometric Condensers; High Vacuum Systems for Steam Turbines; Rotative Reciprocating and HYDROFLO Centrifugal Dry Air Pumps; Cooling Towers; Wainwright Feed Water Heaters; Expansion Joints; and Hammond Water Meters.

Centrifugal Mine Pumps

Centrifugal Pumps as applied to mine service have so many features of superiority that leading engineers are using them almost to the exclusion of any other type of pump.

Incorrect designs and applications of centrifugal pumps on the part of inexperienced manufacturers, whose engineers were not sufficiently versed in the art of designing centrifugal pumps for the high heads and severe conditions of operation encountered in mining service, have been responsible for practically all of the failures of centrifugal pumps in mining work.

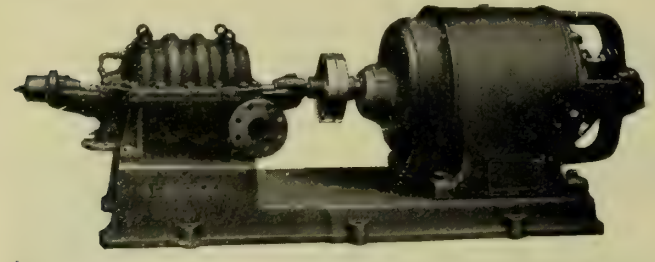


Fig. 1—Alberger Motor Driven Turbine Pump with Horizontally Split Case.

Mine Pumps are in successful operation against heads up to 2000 ft., and should conditions arise which would make it desirable, Alberger Centrifugal Pumps may be designed for heads of 3000 ft. or more, as is now the practice abroad.

Alberger Centrifugal Pumps are successfully operating in every large mining eld in this country. Fig. 2 shows a motor driven Alberger Type "S" Turbine Pump installed by the Cleveland Cliffs Iron Mining Company and operating against a head of 1000 feet.

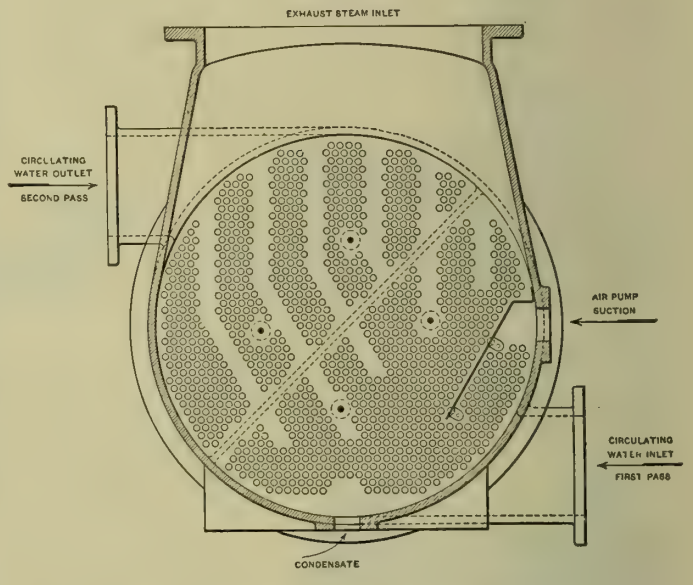


Fig. 4—Alberger Spiroflo Surface Condenser.

Spiroflo Surface Condensers

The Alberger Spiroflo Surface Condenser gives a high vacuum with a minimum amount of surface, on account of the high rate of tube surface heat transfer.

A high temperature of condensate, from one to five degrees below the vacuum temperature, without the use of a primary feed water heater is obtained.

NOTE: The large steam distributing dome; the number and size of the steam distributing lanes; the air cooling and separating compartment placed in the cold circulating water inlet section of the condenser; also that the hot water in the second or outlet pass comes in contact with the entering steam.

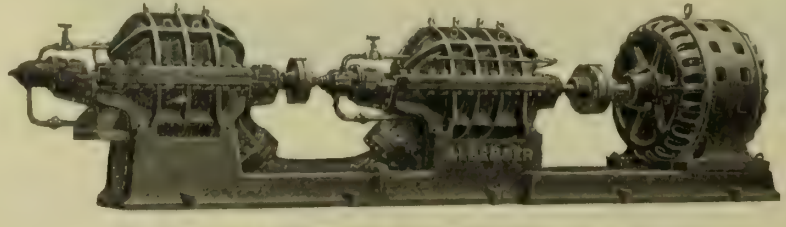


Fig. 2—Alberger Type "S" 7 Stage Turbine Centrifugal Mine Pump. 1,000 gallons per min., 1,000 feet total head.

AMERICAN STEAM PUMP CO.

BATTLE CREEK, MICHIGAN

New York Office: 17 Battery Place. MANUFACTURERS OF Chicago Office: 1220 Monadnock Block.

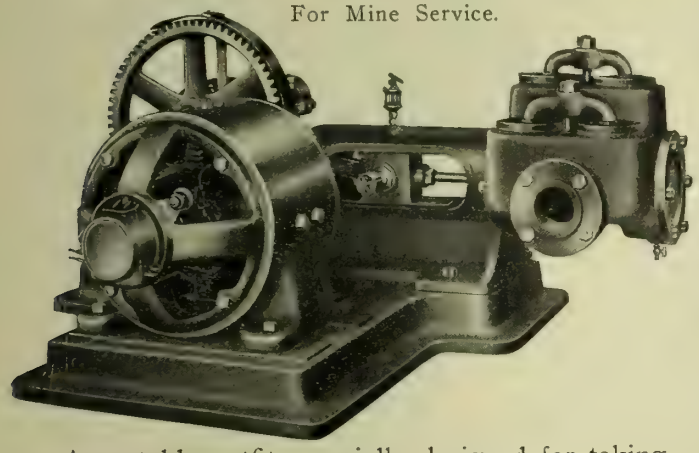
Marsh and American Steam and Power Driven Pumps and Air Compressors

Represented by

DRAVO-DOYLE CO.

Pittsburg, Cleveland Indianapolis, Philadelphia

American Gathering or Dip Pump
For Mine Service.



A portable outfit especially designed for taking care of surplus water accumulating in the side sumps or pockets of mines.

Water end constructed of acid-proof metal.

Instant access to all water valves by simply loosening two nuts. This is very desirable when handling mine water in which small pieces of coal or other foreign matter are likely to clog the valves.

Specifications: The frame is of the heavy box type with the metal carefully distributed to best withstand the severe strains to which it is subjected. The crosshead guides are cylindrical and bearings are lined with genuine babbit and scraped to a true bearing. Connecting rod is of cast steel, crosshead end of solid type with brass boxes. Crank end of marine type with heavy studs and babbitt lined. Crosshead of box type with adjustable bronze shoes.

Pump end is equipped with removable acid-proof bushing. Valve areas are ample and water ways easy. Piston is connected to crosshead by solid acid proof rod.

A suitable sub-base is furnished, as shown in illustration, under both pump and motor.

Size, 5x6: Capacity, 60 gallons per minute; 3 inch suction, 2½ inch delivery. Code word, Dippy.

Size, 6x8: Capacity, 100 gallons per minute; 3½ inch suction, 3 inch delivery. Code word, Dipsop.

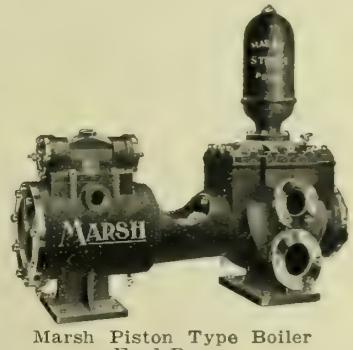
Note: When writing for prices on motor driven outfit, be sure to give the voltage and character of your current, i. e., whether direct or alternating, and if the latter, what cycle and phase.

Marsh and American Steam Pumps

Marsh and American Pumps are made both in the piston and outside center packed plunger patterns. They are fully bronze fitted at regular prices including solid bronze piston rods and cast bronze removable water cylinder bushings. They will not short-stroke, race or pound under the most severe conditions. The absence of outside valve motion on the Marsh Pump reduces the repair cost to a minimum and is especially recommended where it is necessary to employ cheap labor to care for the pump as the valve is set before leaving the factory and requires no adjustment. Marsh and American Pumps are guaranteed to operate on 25% less steam than any duplex pump on the market.

Power Pumps

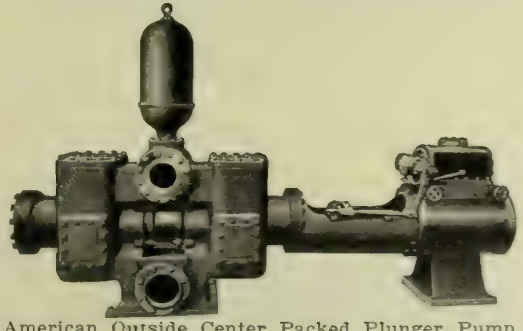
American single and duplex horizontal power pumps vary in capacity from 6 to 1,000 gallons per minute. They are made with the same high grade of material and workmanship which characterize Marsh and American steam pumps. They are simple in design and very rugged in construction. They are furnished with or without motors as desired.



Marsh Piston Type Boiler Feed Pump

Air Compressors

American Improved steam and power driven air compressors have capacities ranging from 3 to 850 cubic feet of air per minute. They are of the most approved and up-to-date design and highest efficiency is guaranteed.



American Outside Center Packed Plunger Pump.

Bulletins

We issue a series of 23 bulletins each covering a different type of pump. Write us for bulletins covering the types in which you are interested or we will be glad to furnish the complete set neatly bound upon request.

THE ALDRICH PUMP COMPANY

ALLENTOWN, PENNA. U. S. A.

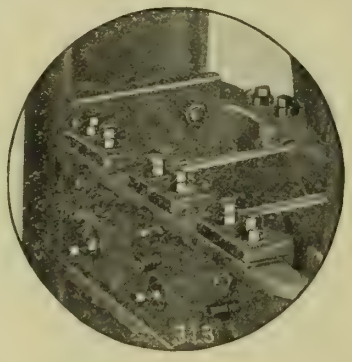
General Characteristics and Specifications
of
Aldrich Mine Pumps

The connecting rods (Cut 135) are of the adjustable type with bronze boxes. A forged steel strap



encircles the stub and bearing allowing adjustment of the boxes from one end by means of a wedge and screw, while the pump is running. The bearings are groved and ample provision is made for proper lubrication.

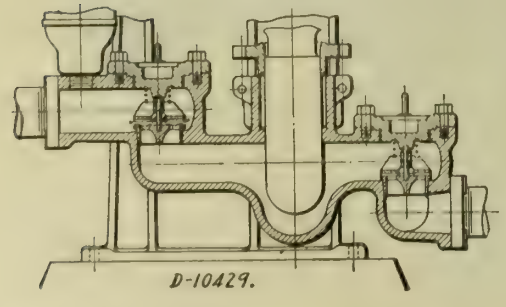
The cradle of cast iron is bolted between the main frames and carries the bored out adjustable ways for the crosshead. (Cut 313).

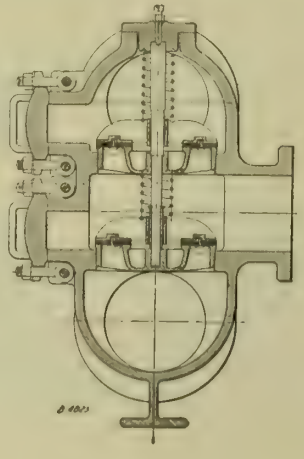


In the smaller sizes of horizontal pumps the main journals are cast in the main frames, but in the larger sizes of horizontal and all the vertical pumps, the main journals are separate from the main frames and are secured to them by heavy bearing caps accurately fitted to both. They are provided with babbitted bearings and can be adjusted by a wedge while the pump is running. (Cut 46-A.)



The Working Barrels and Valve Chambers are made of hard close grained cast iron of spherical and cylinderical construction which gives them the maximum strength for the thickness of metal. The working barrels are bolted between the main frames with turned bolts. The valve chambers contain the suction and discharge valves. Each valve has an independent cover held in position by heavy bolts. In the solid water end type (D-10429) the working barrel and valve chambers are in one casting and in the divided water end type the valves are all in one chamber (B-4825) which is bolted to the working barrel, while in the pot chamber type (B-3857) there is a separate chamber for each valve. These chambers are bolted to the working barrel and are connected by the suction and discharge pipes.





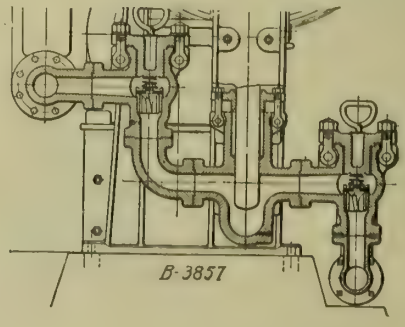


Fig. 136 and 139

The Pot Chamber Pump allows the use of a sectionalized water end, an arrangement which is considered one of the most essential in pump construction.

While this type is adapted for general pumping requirements, such as water works, paper mills, steel factories, etc., it is especially suited for mine service.

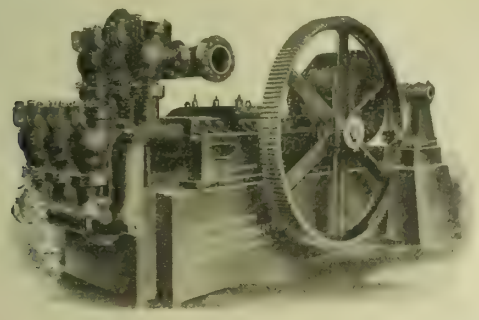


Figure 136
Horizontal Triplex Pot Chamber, Water End Type.
Write for Range of Operation

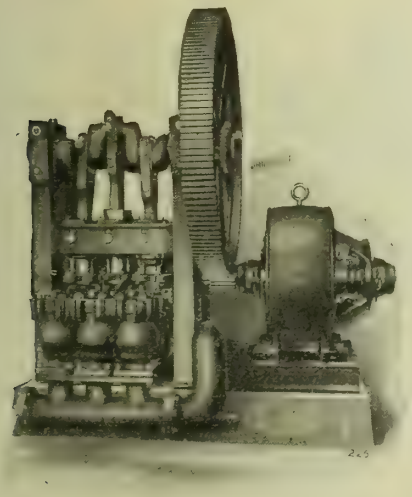


Figure 139
Vertical Triplex Pot Chamber, Water End Type.
Range of operation given in Pump Data No. 33.

Fig. 119

This type of pump is especially designed for working on slopes, incline shafts and for pumping out dips. It is fitted with trucks to suit mine tracks.

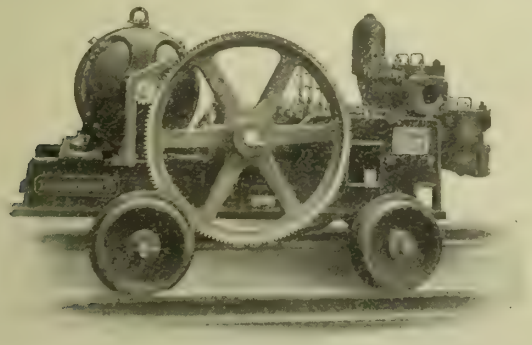


Figure 119
Horizontal Triplex Solid Water End Type, with Trucks.
Pump Data No. 34 gives range of operation.

Fig. 170

Where large quantities of water are to be pumped against low lifts the Divided water end type is recommended. Illustration shows this type of pump fitted with improved herringbone gear drive.

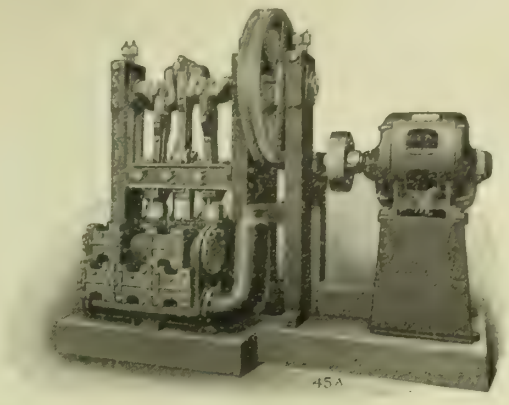


Figure 170
Vertical Triplex Divided Water End Type, with Outboard Standard.

Write for Pump Data No. 32 and full information covering this driving arrangement.

Figs. 146 and 164

For a permanent mine station where the water to be pumped is acidulous, the wood or cement lined pump is recommended. The entire water end is wood or cement lined, increasing the life of the parts against the action of the acid water.

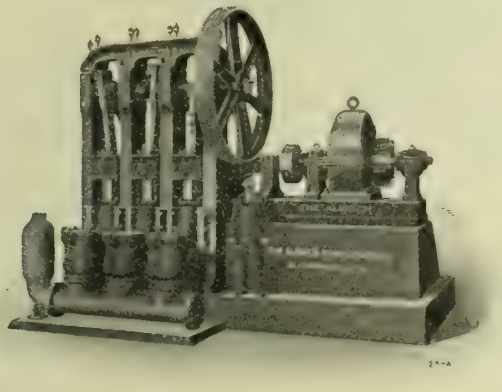


Figure 164
Vertical Triplex, Four Standard Pot Chamber Water End Type.



Figure 146
Horizontal Triplex, Four Standard, Wood Lined, Pot Chamber Water End Type.

BOYTS, PORTER & CO.

MANUFACTURERS OF

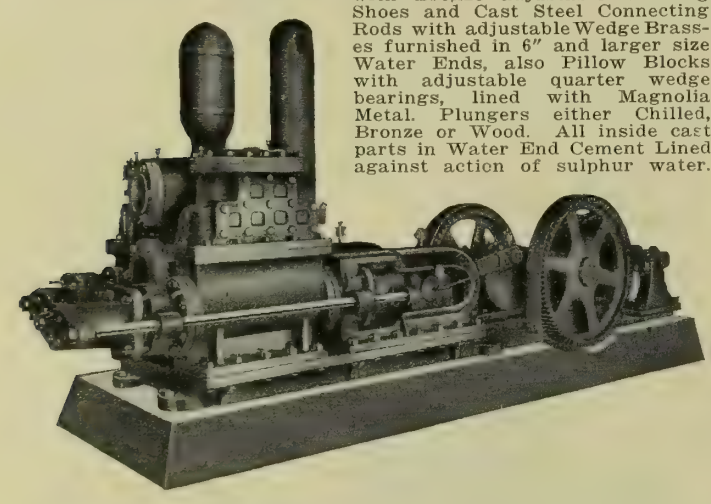
YOUGH PUMPS

CONNELLSVILLE, PA., U. S. A.

Yough Duplex, Double Acting, Double Plunger, Electric Driven Mine Pump

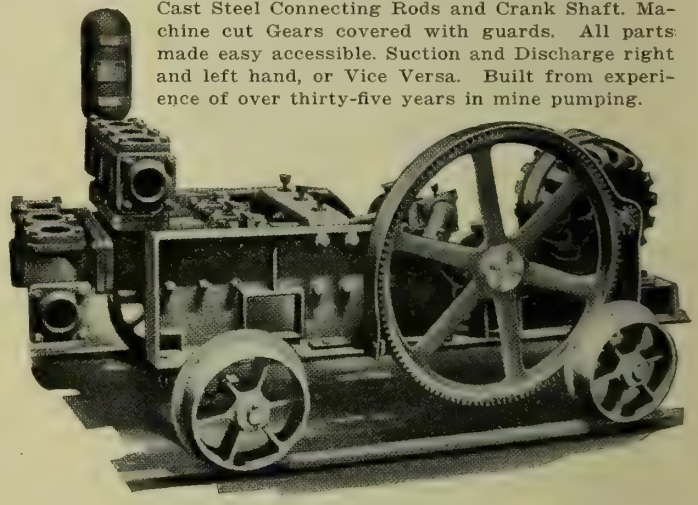
Cement lined and Bronze fitted throughout. Outside end packed plungers. Size—9 inch Plungers, 10 inch Stroke, 10 inch Suction, 8 inch Discharge. Operated by 50 H. P. Motor.

The Plungers are bolted to Cross Heads and are outside end packed. No piston rod is used inside of Water End, the Plungers only working in the Water Cylinder. There are only two Stuffing Boxes used, and they are separate castings from Cylinder, one at each end of Water Cylinder. The Water Valve Chamber is a separate casting from Water Cylinder, and contains all the Water Valves and seats. These Pumps are well built and compact and have great strength and durability. Machine Cut Gears, covered with guards. Glands and Stuffing Boxes Bronze Lined. Bronze Inside Stuffing Box Rings. Bored out guides with Bronze adjustable Wearing Shoes and Cast Steel Connecting Rods with adjustable Wedge Brasses furnished in 6" and larger size Water Ends, also Pillow Blocks with adjustable quarter wedge bearings, lined with Magnolia Metal. Plungers either Chilled, Bronze or Wood. All inside cast parts in Water End Cement Lined against action of sulphur water.



Yough Triplex, Single Acting, Portable Electric Driven Mine Pump

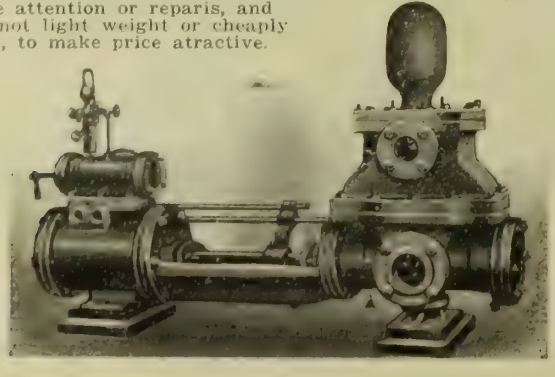
Cement Lined and Bronze Fitted. Size—4 inch Plungers, 6 inch Stroke, 2½ inch Suction, 2 inch Discharge, Operated by 3.5 H. P. This Pump is built especially for dip heading and sump work, taking up litle head room; made strong and compact. The Water Valve Chambers are separate from Water Cylinder. In case of repairs not necesary to throw Pump away; as in one piece Water End. Plungers are bolted to separate Cross heads fitted with heavy Bronze adjustable wearing Shoes. Cast Steel Connecting Rods and Crank Shaft. Machine cut Gears covered with guards. All parts made easy accessible. Suction and Discharge right and left hand, or Vice Versa. Built from experience of over thirty-five years in mine pumping.



Yough Mine and Tank Pump

Size—10 inch Steam Cylinder, 6 inch Water Cylinder, 12 inch Stroke, 4 inch Suction, 3 inch Discharge, 1¼ inch Steam, 1½ inch Exhaust.

The Yough Mine Pumps are among the best constructed, simplest, have fewer parts than any other Pump on the market, and requires less attention or repairs to keep up. All steam valves are in steam chest, no bolts or nuts inside of steam chest to operate valve motion, no rocker arms, plug valves or their equivalents, and no lost motion, large ports for operation by air making less liable to freeze. Steam piston head fitted with self-acting packing rings, no bolts or nuts used except nut on end of piston rod. Water cylinder lined over ports with heavy cast Bronze liner, not Brass pipe, as commonly used. Piston Rods in two pieces in larger sizes permit either head to be taken out without disturbing other end of Pump. Water Valve chamber contains all the water valves and is a separate casting from cylinder. All inside cast iron parts in water end where not Bronze fitted are cement lined, which protects Pump against action of sulphur water. Bronze Valve Chamber can be furnished when desired at an addional cost. These Pumps are build heavy and strong to stand long, continuous service and require very little attention or reparis, and are not light weight or cheaply built, to make price atractive.

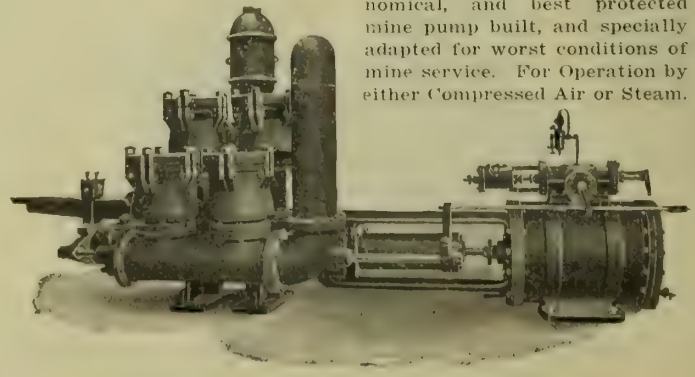


Yough Double Plunger Mine Pump—Wood Lined.

Size—24 inch Steam Cylinder, 12 inch Plunger, 36 inch Stroke, 12 inch Suction, 10 inch Discharge, 3 inch Steam, 4 inch Exhaust.

Outside end packed Plungers, bolted to Cross Heads. Stuffing Boxes of generous depth with heavy Bronze Bushing and Bronze Inside Stuffing Box Rings, Glands Bronze Bushed. Separate and accessible Pot Valve type Water Chambers, lead and Wood lined, with top lids (lead lined) fitted with loose hinged bolts and pins for quick, easy access to the valves (plan of lead lining patented.)

Entire inside of Water End Wood Lined, that no cast iron parts are exposed to action of sulphur water, with Air and Vacuum Chambers, Cataract Valve on Steam Chest to regulate valve motion. Simplicity in Construction, having few parts, made strong and heavy and of best grade material, requiring very little attention or repairs, and is the most durable, economical, and best protected mine pump built, and specially adapted for worst conditions of mine service. For Operation by either Compressed Air or Steam.

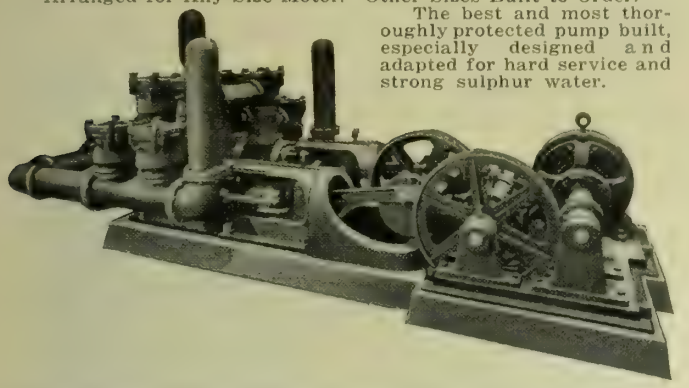


Yough Duplex, Double Acting, Double Plunger, Electric Driven Mine Station Pump—Wood and Lead Lined

Size—10 in ch Plungers, 12 inch Stroke, 12 inch Suction, 10 inch Discharge, operated by 75 H. P. Westinghouse Motor, Falk Herring Bone Gears, Box Girder Type Guides and Pillow Blocks with adjustable quarter wedge bearings. Cast Steel Connecting Rods.

Arranged for Any Size Motor. Other Sizes Built to Order.

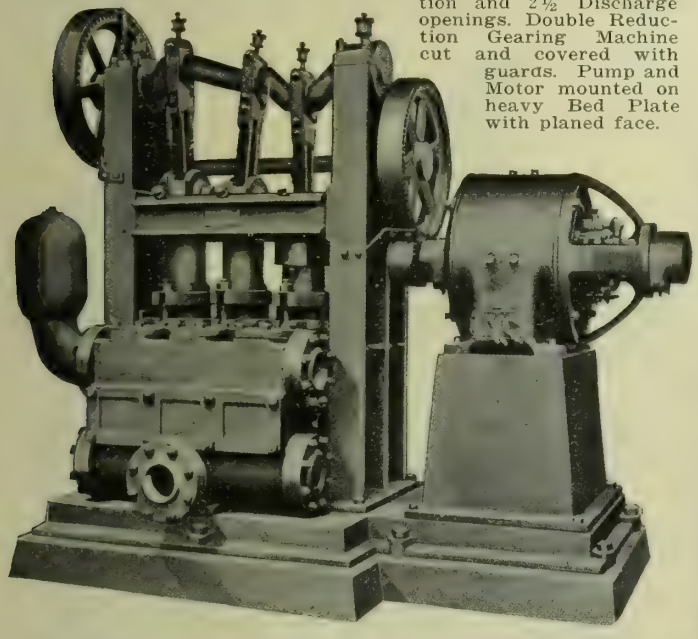
The best and most thoroughly protected pump built, especially designed and adapted for hard service and strong sulphur water.



Yough Vertical Single Acting Triplex Pump, Plunger Pattern, For Fresh Water or Mine Service

Size—6 inch Plungers, 6 inch Stroke, operated by 15 H. P. Motor.

This pump is built very compact and strong for long continuous service. Cast Steel Crank Shaft and Connecting Rods fitted with adjustable brasses. Water Valve Chamber in one casting arranged for quick and easy access to Valves. 3 Suction and 2½ Discharge openings. Double Reduction Gearing Machine cut and covered with guards. Pump and Motor mounted on heavy Bed Plate with planed face.



Yough Special Boiler Feed Pump. Double Plunger Pattern. Standard Sizes—For Hot or Cold Water.

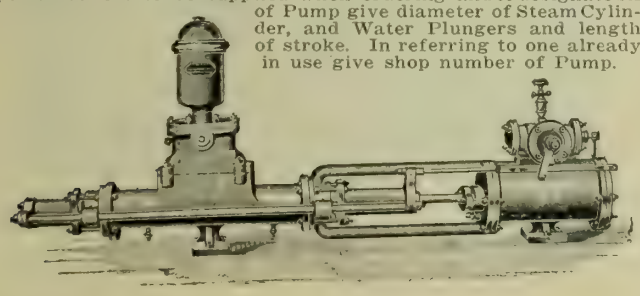
These Pumps are direct, double acting, outside end packed plungers, and are constructed that plungers work close in the water cylinder, with but little clearance at end of plunger, thus allowing no surplus hot water to remain in cylinder at end of stroke, which prevents expansion of steam.

Will run very slow and continuous when feeding boilers, and are very economical in steam.

Specially designed and built for Boiler Feed Service, With Bronze self-grinding Valves and Seats, for hot or cold water.

All water valves are in Water Valve Chamber, which is a separate casting from the Water Cylinder. Nothing but the plungers work in Cylinder. All parts arranged for quick access and easy handling. Ground steam joints on Steam End.

Built in long stroke, which reduces wear of Pump, have great strength and durability for long, continuous service. A Boiler Feed Pump should run slow. In pumping hot water, the pump should be set that the water flows into Pump. Always give horse-power boilers to be supplied when ordering and to designate size of Pump give diameter of Steam Cylinder, and Water Plungers and length of stroke. In referring to one already in use give shop number of Pump.



The Yough Electric Power Head With Differential Plunger

Size—24 inch Stroke. Operated by 5 H. P. Self-Starting Motor. Single, Vertical Electric Driven Deep Well Head with Direct Connected Motor.

The Pump illustrated in Fig. 1388 is our improved type, built very compact and rstong, close to base for rigidity, and designed that the power head need not be removed from foundation to remove casing and working barrel from the well. Crank Shaft is of forged steel with adjustable brasses, double reduction gearing, machine cut and covered with guards. All bearings and caps lined with Magnolia Babbitt Metal. Air Chamber on Discharge. Entire Pump mounted on heavy cast iron bed plate with planed face. Differential Plunger maintains steady flow of water. Can be used with either single or double acting working barrel. Can be arranged for belt driven if desired.

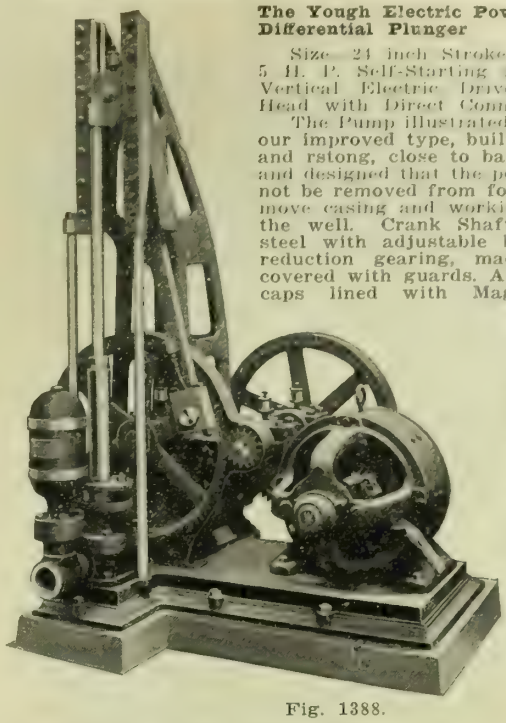
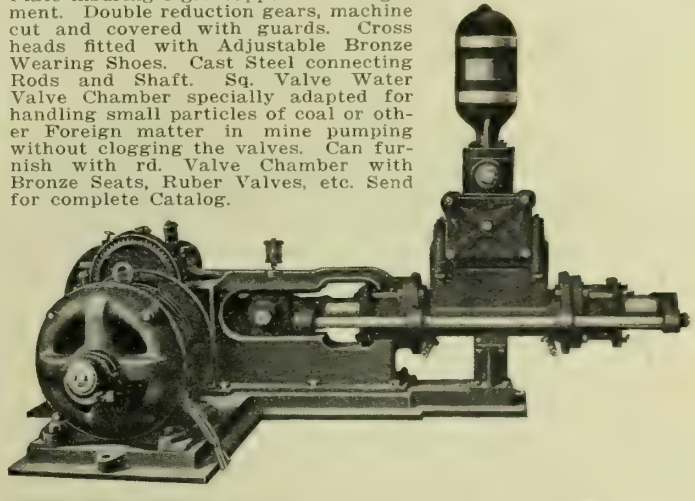


Fig. 1388.

Yough Double Acting Plunger Pump

Single Water End, Outside End Packed Plungers. Size—3½ inch x 8 inch, operated by 5 H. P. Motor. Other sizes built to order.

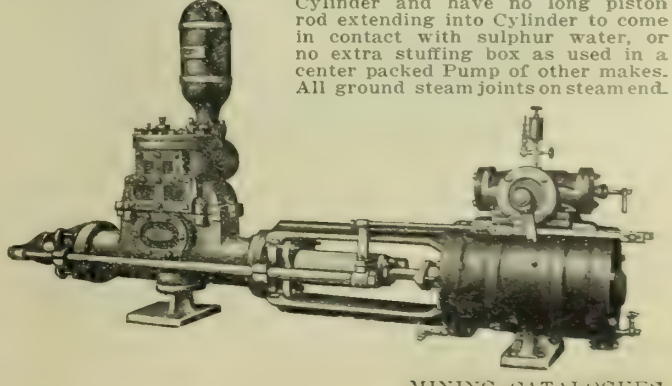
Built compact and strong and adapted for general pumping or mine service. Pump mounted on Bed Plate insuring rigid support and alignment. Double reduction gears, machine cut and covered with guards. Cross heads fitted with Adjustable Bronze Wearing Shoes. Cast Steel connecting Rods and Shaft. Sq. Valve Water Valve Chamber specially adapted for handling small particles of coal or other Foreign matter in mine pumping without clogging the valves. Can furnish with rd. Valve Chamber with Bronze Seats, Ruber Valves, etc. Send for complete Catalog.



Yough Mine Pump, Plunger Pattern—Cement Lined and Bronze Fitted

Size—16 inch Steam Cylinder, 8 inch Plungers, 18 inchc Stroke, 6 inch Suction, 5 inch Discharge, 2 inch Steam, 2½ inch Exhaust. Built for Operation with Steam or Compressed Air. Standard Strokes.

This type of Pump is specially adapted for mine service, deep stuffing boxes, plungers outside end packed and guided, stuffing boxes and glands lined with heavy Bronze liner and Bronze inside stuffing box ring which takes the wear off the stuffing box and can be easily and quickly removed and replaced. No wearing parts in Water Cylinder, except inside ring. Separate Water Valve Chamber contains all the Water Valves, and have large areas and free pasages. Nothing but the plungers work in Cylinder and have no long piston rod extending into Cylinder to come in contact with sulphur water, or no extra stuffing box as used in a center packed Pump of other makes. All ground steam joints on steam end.



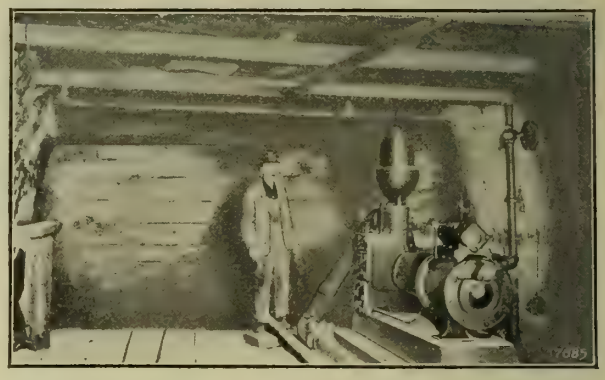
A. S. CAMERON STEAM PUMP WORKS

Manufacturers of

Steam, Centrifugal and Triplex Pumps

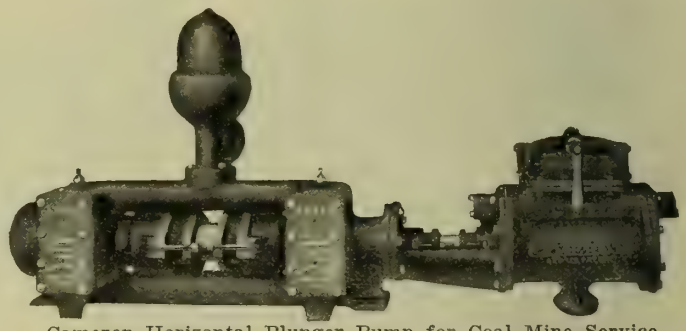
Main Office, 11 Broadway, N. Y. Branch Offices in All Large Cities

Cameron Steam Pumps
have been widely used in coal mines for over half a century, because they are unusually simple, compact, strong, durable and economical. Fewer working parts than any other steam pump. Only four pieces in the steam mechanism. By simply removing the valve chest cover the whole interior of the water cylinder is in full view. The suction and discharge valves are held in place by one stem, which can be removed by unscrewing one plug. Combined with these advantages is the Comeron high grade of material and workmanship.



Cameron 14 x 9 x 18 Steam Piston Pump, 350 G. P. M. Working Against 300 ft. Head, in Ill. Coal Mine.

The Cameron Piston Pump
(Shown in the upper illustration)
is built for all classes of service, in capacities from 10 G. P. M. to 1000 G. P. M. against 400 feet head at ordinary speed. The water cylinders are made with or without fixed or loose linings, or entirely of our special acid resisting metal.



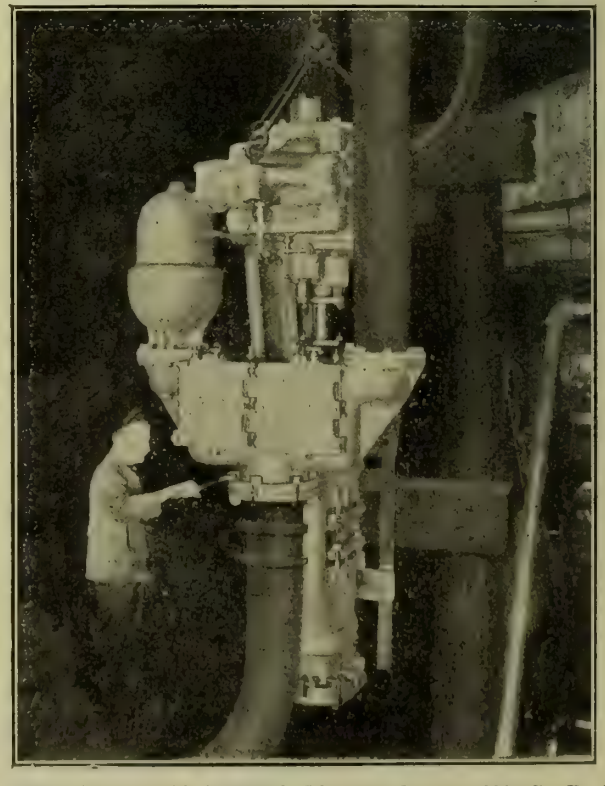
Cameron Horizontal Plunger Pump for Coal Mine Service.

Cameron Horizontal Plunger Pumps
(Shown in the second illustration)
have all the economical operating features of the piston type described above. They are especially built to handle gritty water. In the water end there are no wearing parts, except the packing in the stuffing boxes, which can be instantly adjusted from the outside. The pump barrel cannot get worn by grit or sand, as the plunger works in loose sleeves. Built in capacities from 10 G. P. M. to 1200 G. P. M. to work against 400 feet head at ordinary speed.

Cameron Vertical Plunger Pumps
(Shown in the lower illustration)
have gained a world wide reputation as the most successful shaft sinking pumps. They are exceptionally simple and strong. They take up less room in the shaft than any other pump, and have no outside parts to get damaged by collision with the side walls. They are certain in operation, can handle gritty water and require little attention. Built in capacities from 25 G. P. M. to 1600 G. P. M. to work against heads of 400 feet at ordinary speed.

The reliability and efficiency of CAMERON PUMPS has been tested in thousands of coal mine installations.

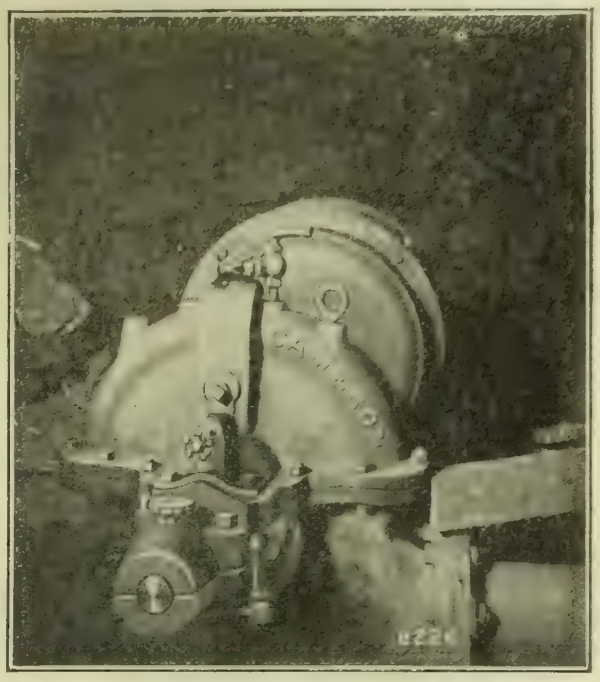
Full information in Bulletin No. 104—It's free.



Cameron 20 x 12 x 16 Vertical Plunger Pump, 600 G. P. M., Working Against 300 Feet Head, in a Penn'a. Coal Mine.

Cameron Centrifugals
are most modern in design and built with the special aim to produce a combination of high working value and low operating cost. Actual tests have proved that they are highly efficient and economical.

The superintendent of a Pennsylvania Coal Mine writes: "The Cameron Centrifugal, which took the place of another make, delivers 20% more water than the other pump did when new."

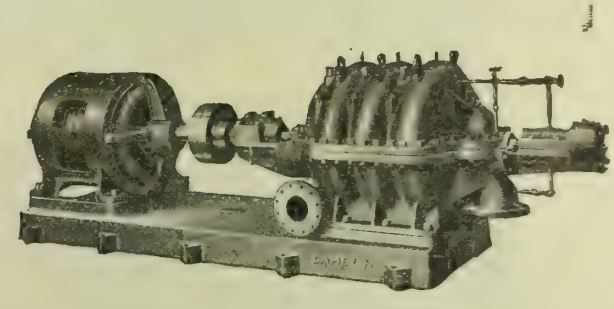


Cameron 11" Double Suction Volute Centrifugal Pump, Installed in a Penn'a. Coal Mine.

The Cameron Double Suction Volute Pump
(Shown in the upper illustration)
is built for moderate heads. It has an enclosed impeller and the casing is horizontally split. By removing the upper casing the working parts are easily reached without disturbing pipe connections or pump alignment.

Built in capacities from 50 G. P. M. to 15000 G. P. M., in a variety of speeds, and for heads from 10 to 200 feet. Described in Bulletin No. 150.

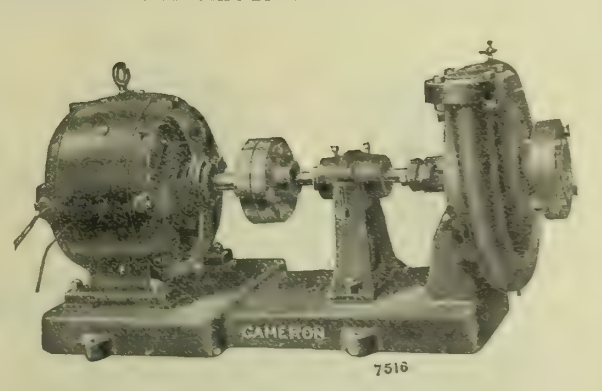
The Cameron Multi-Stage Pump
(Shown in the second illustration)
is built for high heads. It is very simple, strong and dependable. Its efficiencies are high and continue over a long period of service. The impellers are enclosed, and the horizontally split casing gives quick access to the working parts.



Cameron 6" Four-Stage Centrifugal, Delivering 1000 G. P. M., Against 500 Feet Head, in a Tenn. Mine.

Built in two, three and four stages, for capacities from 75 G. P. M. to 25,000 G. P. M. and heads from 120 to 800 feet. Described in Bulletin No. 151.

The Cameron Single Suction Pump
(Shown in the lower illustration)
is strong and rugged all through. The impeller is of the open type. This pump is very efficient in handling mine water, which contains grit and small solids.



Cameron Open Impeller Motor Driven Pump for Heads Up to 70 Feet.

Built in capacities from 200 G. P. M. to 8,000 G. P. M. for heads up to 70 feet. Described in Bulletin No. 152.

All these CAMERON CENTRIFUGALS can be direct connected to electric motor or steam turbine, or can be arranged to suit any motive power.

Write for Bulletins.

Columbus Steam Pump Works Company

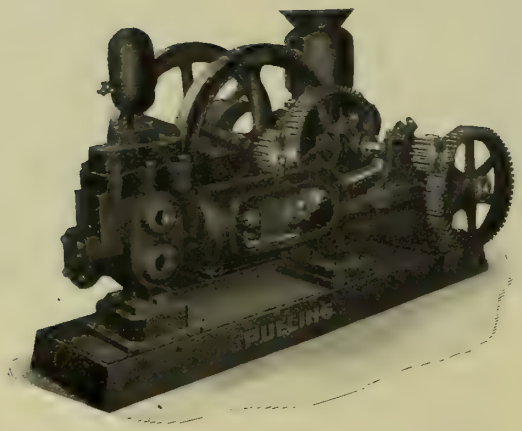
JAMES G. PULLING & CO.

Manufacturers of

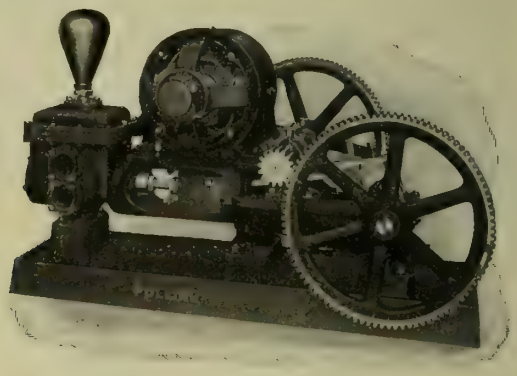
Pulling Pumps

Columbus, Ohio, U. S. A.

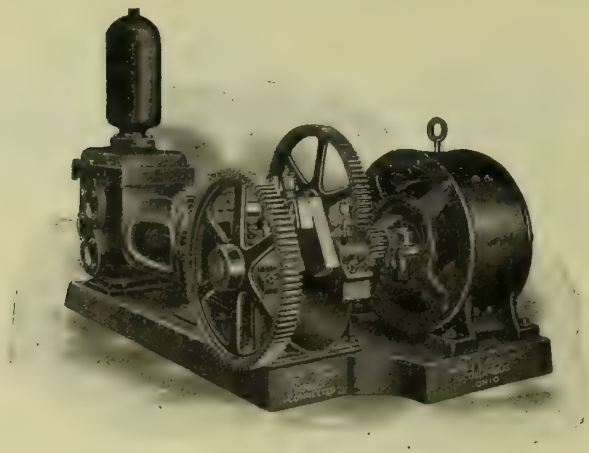
Write for Bulletins



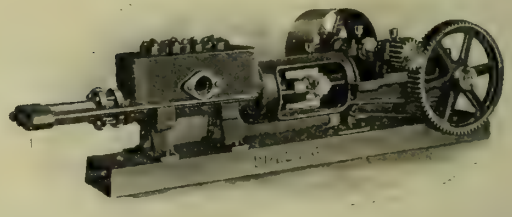
Sump Pump Direct Connected to Gas Engine.



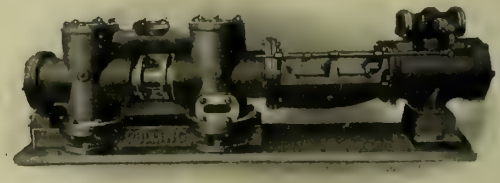
Electric Driven Sump Pump, Made in All Sizes.



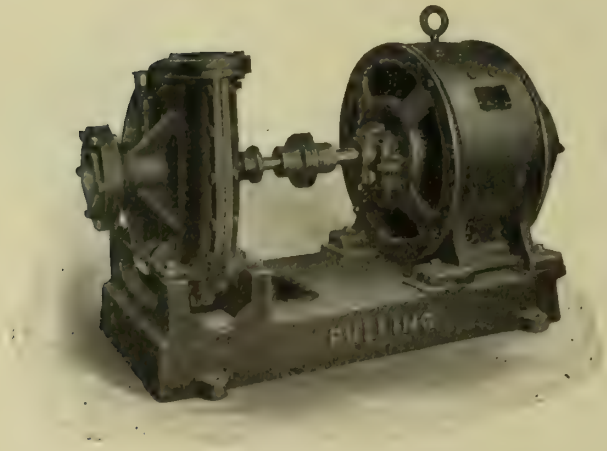
Electric Driven Mine Pump.



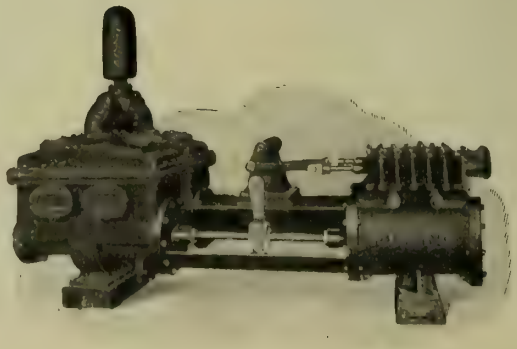
End Packed Plunger Pump.



Center Packed Plunger Pump.



Centrifugal Pumps for Every Duty.



Duplex Pumps of Every Description.

THE DAYTON TURBINE PUMP CO.

Cleveland. Ohio

Builders of the

"Dayton" Turbine and Volute Pumps

Multi-Stage and Single-Stage Pumps are of the Double Suction type.

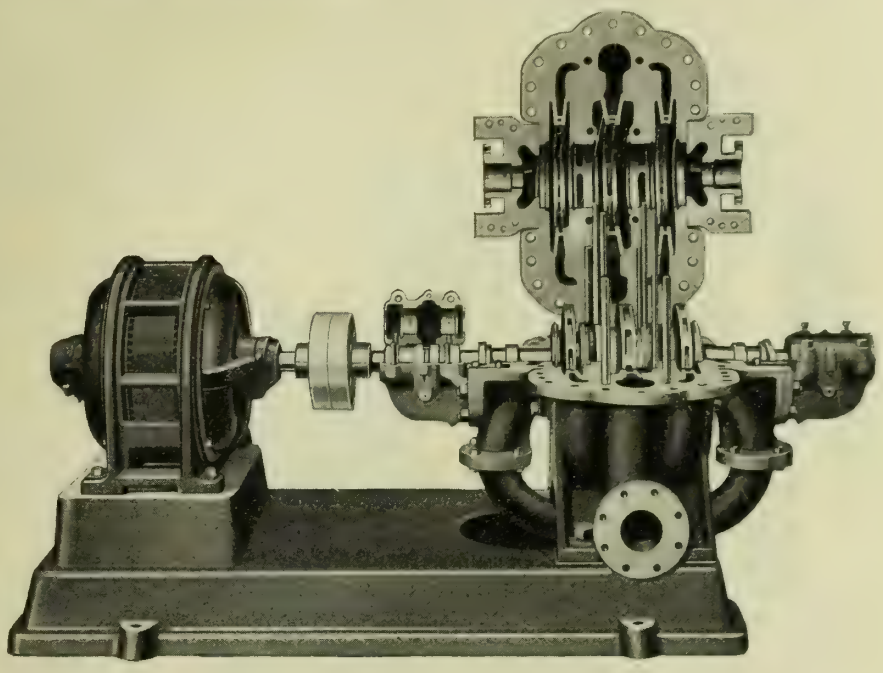
Capacities range from 20 gallons per minute to 30,000 gallons per minute.

Designed for any pressure within practical limits.

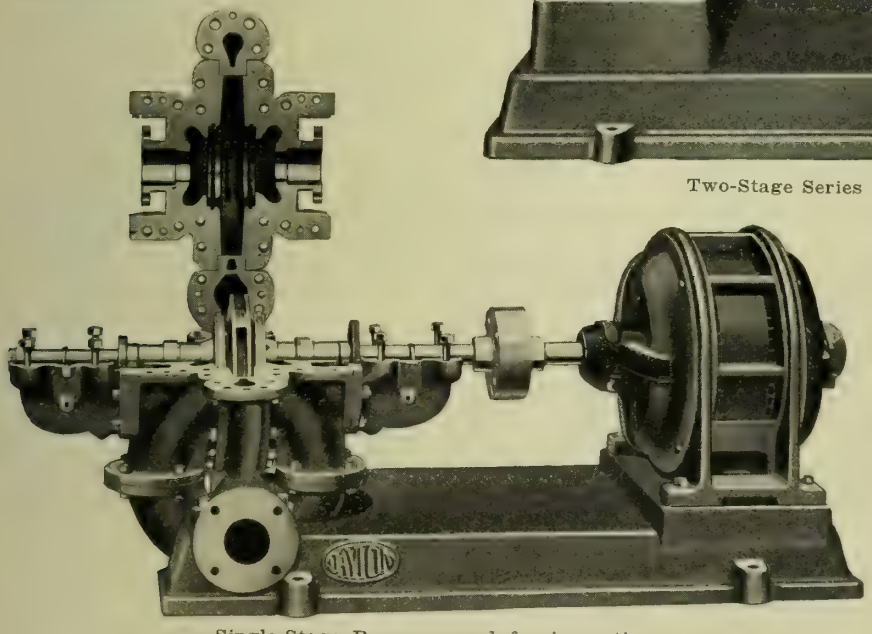
These pumps can be driven by electric motors, steam turbines or other motive power or belt drive.

They can be furnished in either the horizontal or vertical types.

Built of suitable metal to meet conditions.



Two-Stage Series Pump, opened for inspection.



Single-Stage Pump, opened for inspection.

Highest grade of material and workmanship.

High efficiency.

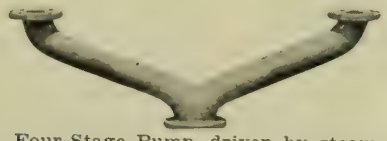
Durability.

Renewable wearing rings on impellers and casings.

Renewable shaft covers.

Ring oiling bearings.





Four-Stage Pump, driven by steam turbine.

CATALOGS AND PRICES FOR ALL SERVICES CHEERFULLY FURNISHED ON APPLICATION.

THE DEMING COMPANY

SALEM, OHIO

HAND AND POWER PUMPS FOR ALL REQUIREMENTS

GENERAL AGENCIES

PITTSBURGH, Harris Pump & Supply Co. NEW YORK, Ralph B. Carter Co.
CHICAGO, Henion & Hubbell DENVER, Hendrie & Bolthoff Mfg. & Supply Co.

Agencies in All Principal Cities.

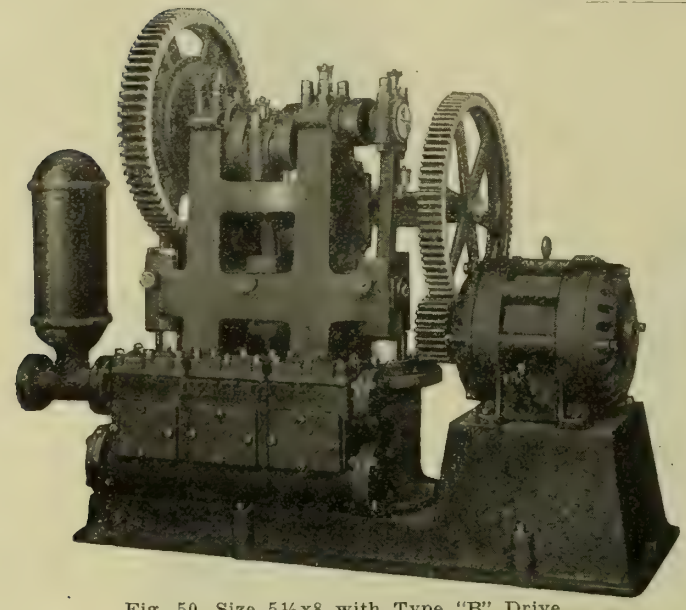


Fig. 50, Size 5½x8 with Type "B" Drive.

Products

Hand and Power Pumps for mine service and for general water supply, including:

Triplex Power Pumps

which are made in vertical or horizontal types; portable or stationary; single or double acting; electric or belt driven; many different styles and sizes; standard or special construction as conditions may necessitate; capacities from 5 gallons per minute to 1,000 gallons per minute.

Power Piston Pumps

Electric or belt drive; stationary or portable; standard or special construction, to suit conditions; capacities from 20 to 200 gallons per minute. Trade names "Neptune," "Triumph," "Trojan," "Vulcan," and "Ajax."

Deep Well Working Heads and Cylinders

Electric or belt driven; standard or special construction to suit conditions; for pumping water from deep wells for general water supply.

Economy

Deming Power Pumps cost much less to operate than steam pumps. Carefully conducted tests have proven that when a steam pump is used as a boiler feeder, very often much more steam is required to operate the steam pump than is consumed by the engine which runs the entire plant. This is more plainly demonstrated when it is understood that the average direct acting steam pump consumes not less than 150 pounds of steam per H. P. per hour, while a fairly efficient steam engine will require not more than 30 to 40 pounds per H. P. per hour. To this direct saving in steam consumption should also be added the loss by condensation incidental to long steam pipe lines, and also the additional cost and inconvenience of the pipe as compared with electric wiring. When used as sump pumps, gathering pumps, "station" pumps, boiler feeders, etc., Deming power pumps give the greatest possible returns on the investment because of their low operation and maintenance expense.

Service

Large stocks of standard mine pumps and motors are carried at Salem, Pittsburgh, Chicago, and Denver for prompt shipment. Wire orders are given especial attention.

Experienced engineers at the factory and branch agencies are prepared to furnish expert advice concerning outfits which will best suit existing conditions. When corresponding, it will facilitate matters if we are supplied with the information requested under the heading "When Ordering Pumps," on page 314.

Evidence

The letters below are typical of hundreds which we have on file, testifying to the merits of Deming Pumps. We will gladly supply the names of users of Deming Pumps in your vicinity if desired.

From West Kentucky Coal Company.

Sturgis, Kentucky.

I take pleasure in advising that the thirteen Power Pumps purchased from you within the last few years have given excellent satisfaction.

We have had experience with a large number of various makes of pumps, and have after careful investigation, adopted your Pumps as our standard, for all inside and outside work requiring Power Pumps.

We cheerfully recommend your equipment for all mining purposes.

Yours very truly,
(Signed) R. J. FOLEY, JR.
Pur. Agent.

From the Northern Coal & Coke Company.

512 Boston Bldg., Denver, Colo.

We are using two of your small mine pumps, one of them having been in use continuously, **for over ten years** at our Industrial mine, at Superior, Colo. These pumps have both given splendid service and it gives me pleasure to say a good word for them.

(Signed) CHAS. M. KIRK,
Pur. Agent.

From the Mosgrove Coal Works.

Mosgrove, Pa.

Answering your inquiry of the 14th inst., relative to the Deming electric mine pumps furnished to this Company, would say that the Fig. 70, 4x6, 2½ H. P. pump shipped to us on November 28th, 1903, was put into use as soon as received, and has been giving very satisfactory service ever since; the same is true of the Fig. 70—4x6, 3 H. P. pump shipped us on April 18th, 1906.

The service on both of these pumps has been practically continuous; cost of repairs to wearing parts relatively small, and both are in good shape at the present time.

Yours very truly,
GEO. H. DEIKE,
Supt.

Guarantee

Our pumps are fully guaranteed to perform the duty for which they are rated or recommended, and we shall hold ourselves under obligation to supply, without charge, any part breaking within one year of date of shipment, where such breakage bears unmistakable evidence of faulty material or workmanship.

Catalogues

In addition to our many different pumps for mine service, we also make in hundreds of styles and sizes, hand, and power pumps for all uses, which are described in the following departmental catalogues:—

Power Pump Catalogue "J"—192 pages devoted to triplex and other power pumps; deep well working heads and cylinders, etc.

General Catalogue No. 25—300 pages; covering our pitcher spout pumps; well pump standards; set length lift and force pumps; pumps for miscellaneous uses, cylinders, well supplies, etc.

Spray Pump Catalogue—44 pages, describing our bucket, knapsack, cart, barrel, tank, field and power sprayers, also nozzles and accessories for all spraying conditions.

DEMING TRIPLEX MINE PUMPS

SPECIFICATIONS OF STANDARD VERTICAL AND HORIZONTAL TYPES

Fig. 50, For General Service

(Illustrated on opposite page.)

These specications give a good idea of the rugged construction of Deming Pumps in general. We give the specifications of Fig. 50, because it is a typical triplex power pump, and is one of our popular pumping units.

Frame consists of two standards, and includes crosshead guides and main crank shaft bearings, the latter being lined with best anti-friction metal. In sizes 4x4 and smaller the frame is cast in one piece with the cylinders.

Crank Shaft is of best open hearth steel casting in one piece.

Gearing is machine cut, and is double in 10-inch stroke sizes, and in sizes 11x12 and larger. Other sizes made with double gearing at extra price.

Pinion Shaft is of steel, running in boxes lined with best anti-friction metal, and bolted to the main housings.

Connecting Rods, in sizes 4x6 and larger, have bronze boxes with wedge and screw adjustment at crosshead end, and marine type babbitted boxes at crank end. Smaller sizes have bronze bushings at crosshead ends.

Crossheads run in bored guides, sizes 4x6 and larger having adjustable bronze shoes.

Plungers are of hard, close-grained cast iron, finished true and smooth, and reciprocate through packing of ample depth.

Cylinders and Base are in one casting in sizes 10x10 and smaller, and in larger sizes the cylinders are in three separate castings bolted to the base.

Valve Chambers, in sizes 3½x4 and larger, are separate castings bolted to the cylinders. They are of liberal proportions, affording large valve area, and all valves are readily accessible.

Valves for cold water are rubber discs, protected on top from cylindrically wound springs by brass plates. For hot water either special hard composition valves or bronze valves are furnished as ordered.

Valve Seats are of bronze, screwed into decks, and are of the grid type. Iron seats and valves furnished when conditions require.

Air Chamber furnished when specified. Vacuum Chamber to order.

Grease Cups, or Oil Cups if specified, and wrenches furnished with all pumps.

Type "B" Drive (Cipher, "TYPEB") includes sub-base on which both pump and motor are mounted, and with gearing connection between pump and motor.

Fig. 50, Standard Sizes, Capacities, Etc.

Plungers		Capacity		Max. Working Pressure, Lbs.	Diam. of Pipes		*Tight and Loose Pulleys	Cipher
Diam. Inches	Stroke Inches	Usual Rev. per Min.	Gals. per Min.		Suction Inches	Dischg. Inches		
2	2	70	5.67	150	1½	1	8x 2	Obese
2½	2	70	8.89	150	1½	1	10x 2	Oberlize
2½	3	60	11.4	150	2	1½	12x 3	Oaken
3	3	60	16.2	150	2	1½	14x 3	Oath
3½	3	60	22.	150	2	1½	16x 3	Oakling
3½	4	60	30.	150	2½	2	16x 4	Obelus
4	4	60	39.	150	2½	2	18x 4	Oakum
4	6	60	59.	160	2½	2	20x 5	Oarsman
4½	6	60	74.	150	3	2½	20x 5	Oaky
5	6	60	91.	150	3	2½	24x 5	Oasis
5½	8	60	147.	150	4	3	28x 6	Oatmeal
6	8	55	161.	140	4	3	30x 6	Obdurat on
7	8	55	220.	150	5	4	30x 8	Obdurate
8	8	55	287.	150	5	4	36x 8	Obiter
8½	8	55	324.	140	6	5	36x 8	Obdure
8	10	50	326.	140	6	5	36x 8	Overcoat
9	10	50	413.	160	8	6	42x10	Obloquy
10	10	45	459.	150	8	6	42x12	Obsignate
10	12	42	514.	140	8	8	42x14	Objuration
11	12	42	622.	160	10	8	48x14	Obduct
12	12	42	740.	150	10	8	48x16	Obduction
12	14	40	822.	150	12	10	48x18	Observance
13	14	40	965.	140	12	10	48x20	Observant

*Sizes 9x10 and larger regularly furnished with tight pulley only. Gear ratio is 5 to 1.

Fig. 70, For General Service

(Illustrated below.)

Fig. 70 Portable Electric Driven Triplex Mine Pump is of the horizontal, single-acting, outside packed and outside guided plunger type, and is especially designed for pumping out mine sumps. It is very compact, requiring a minimum amount of head room, and being mounted on a portable truck, is easily moved from place to place as required. The truck is wholly of iron, and not affected by moisture, thereby insuring permanency of alignment of pump and motor.

The standard construction of the working parts of the pump, including guide columns, crank shaft, gearing, connecting rods, plungers, valve chambers, etc., is the same as for corresponding sizes of our Fig. 50 vertical pump, and insures the promptness in furnishing repair parts, which is so essential in mining operations.

The cylinders are of special design to meet the conditions imposed by the horizontal type.

Standard construction includes iron plungers, glands, cylinders and valve chambers, and iron truck complete with wheels having a 9-inch diameter tread; intermediate gear and rawhide motor pinion for connecting motor, but **motor is not included unless so specified.**

All gearing is carefully protected by steel guards. Truck wheels of other diameter than 9-inch furnished, when specified. Grease cups, or oil cups if specified, and wrenches furnished with all pumps.

Special Construction: Brass cased plungers, or solid bronze plungers, and bronze lined stuffing boxes and glands, or entire water end made of bronze, at extra price.

Correspondents should state gauge of track, height of roof, suction lift, discharge elevation and approximate lengths and diameters of pipes, and should also furnish dimensions of motor, if ordering.

We can furnish Fig. 70 with a base for stationary service, if desired. Pump is then designated as Fig. 71.

Fig. 70, Standard Sizes, Capacities, Etc.

Plungers		Capacity			Diam. of Pipes.			*Cipher
Diam. Inches	Stroke Inches	Gals. per Rev.	Usual Rev. per Min.	Gals. per Min.	Max. Head Feet.	Suction Inches	Dischg. Inches	Intermed. Gears	Standard Fitted
3½	4	.50	60	30	300	2½	2	Special	Organism
4	4	.65	60	39	300	2½	2	Special	Organist
4	6	.98	60	59	320	2½	2	Special	Ordinal
4½	6	1.24	60	74	300	3	2½	Special	Orbate
5	6	1.53	60	91	300	3	2½	Special	Ordinance
5½	8	2.46	60	147	300	4	3	Special	Ordinate
6	8	2.94	55	161	280	4	3	Special	Orgasm
7	8	4.00	55	220	300	5	4	Special	Ordination
8	8	5.22	55	287	300	5	4	Special	Orgy
8½	8	5.90	55	324	280	6	5	Special	Ordnator

Gear ratio 5 to 1.

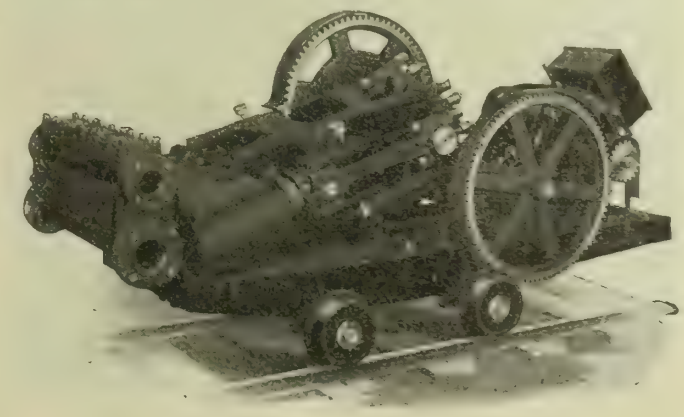


Fig. 70, Portable Mine Pump.

See Next Page.

DEMING HORIZONTAL TRIPLEX PLUNGER PUMPS FOR MINES

WITH GUARDED GEARS AND ACCESSIBLE VALVES

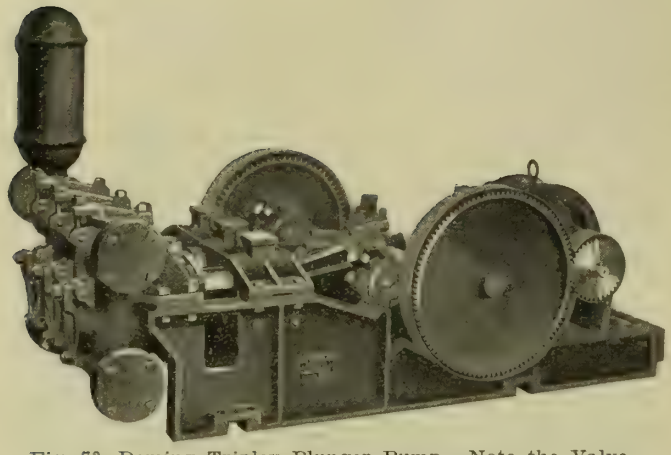


Fig. 73, Deming Triplex Plunger Pump. Note the Valve Construction.

When desired, we will furnish wheels and axles, at extra cost, for converting Fig. 73 into a portable pump.

Fig. 73 Horizontal Single Acting Triplex Plunger Pumps are the result of twenty years of experience in designing and manufacturing electric pumps for mine service and are recommended for use where conditions are such that the pressure at the pump does not exceed 100 pounds. The design has been made as simple as possible throughout, especial attention being given accesibility and to the protection of the operator from injury.

The valve area is large, and yet the design is such that the clearance is reduced to a minimum, making the pump especially desirable for a gathering pump, as it readily frees itself of air. The side frames are provided with slots to permit mounting on mine car axles when desired to be used as a portable outfit. It is also furnished, when preferred, with a single reduction of gearing for connecting a slow speed motor instead of with double reduction of gearing as illustrated.



Deming Mine Pump, Fig. 70, in Workings of the Pittsburgh Coal Co.

Specifications:

Crank Shaft is of best open hearth steel in one piece with flange for gear.

Gearing is machine cut, the motor pinion being of rawhide unless otherwise specified. The Crank Gear is bolted to the crank shaft and can be taken off without removing the shaft from its bearings.

Connecting Rods have babbitt lined adjustable boxes at the crank end and bronze bushings at the plunger end.

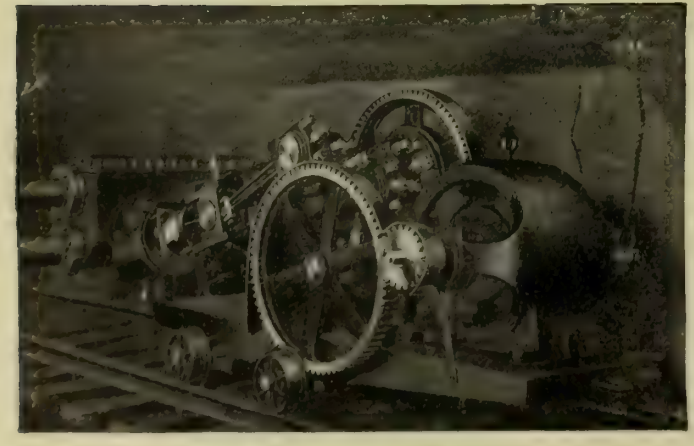
Plungers are of close grained iron unless otherwise specified, and the cross-heads reciprocate through bored guides.

Cylinders and Valve Chambers are unusually heavy for mine service and are provided with hand hole covers which give very quick access to valves.

Valves are of rubber on bronze grid seats which are screwed into decks.

Air Chamber, Grease Cups and Wrenches are furnished.

Special Construction: Pumps furnished with bronze or brass cased plungers and bronze lined stuffing boxes and glands when required. Wheels and Axles are also furnished when wanted for converting into a portable pump.



Deming Mine Pump, Fig. 70, in Workings of the Jas. Mullins Coal Co.

Fig. 73, Standard Sizes, Capacities, Etc.

Plungers		Capacity			Max. Dischg. Pressure Lbs.	Diam. of Pipes	
Diam. Inches	Stroke Inches	Gals. per Rev.	Usual Rev. per Min.	Gal. per Min.		Suction Inches	Dischg. Inches
4	5	.81	62	50	100	3	3
5	6	1.53	66	100	100	4	3
5½	8	2.46	61	150	100	5	4

DEMING DEEP WELL WORKING HEADS

FOR GENERAL WATER SUPPLY

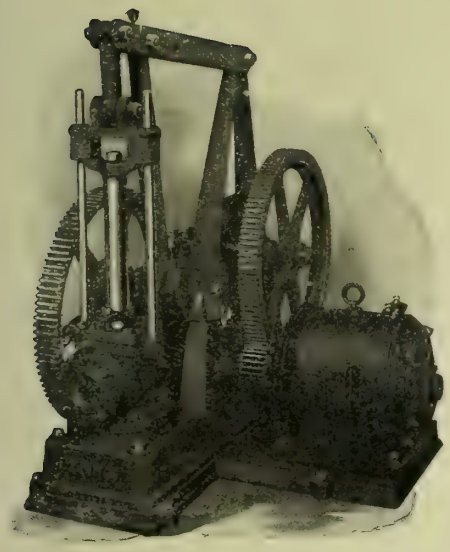


Fig. 62, 16-inch Stroke with Type "B" Drive.



Fig. 324 Single Acting Brass Deep Well Cylinder.

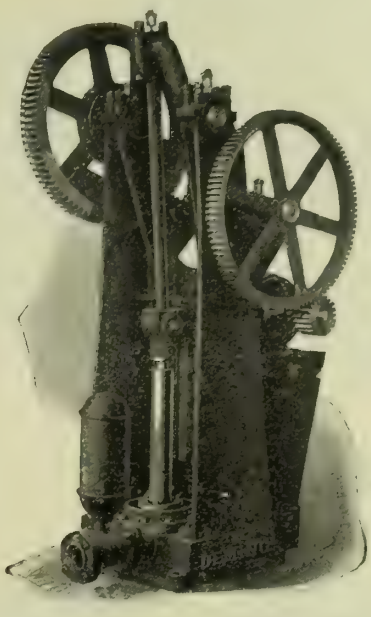


Fig. 80, 24-inch Stroke with Type "B" Drive

Fig. 62, with Differential Plunger

Fig. 62 is adapted especially for supplying water from deep wells when used in connection with one of our deep well cylinders. It is very substantially built, and the "low-down" design, as well as other features, make it the most accessible deep well pump on the market. By disconnecting the differential plunger from the crosshead and the walking beam from the connecting rod, and removing the stuffing box cap, the plunger can be readily withdrawn without disturbing the pipe connections. The stroke is adjustable, thereby permitting the easy regulation of the pump capacity to the flow of the water in the well.

Fig. 62, Sizes, Etc.

Stroke Inches	Maximum Diameter of Pipes		Gear Ratio	Tight and Loose Pulleys
	Suction Inches	Dischg. Inches		
8, 9 and 10	4½	2½	6 to 1	16x3
12, 14 and 16	6	3	7 to 1	20x5
20, 22 and 24	8	4	6⅔ to 1	28x6

Fig. 62.

Maximum Speed and Capacity per Minute with Fig. 324 Cylinder.

Diam. Cyl. Inches	10" Stroke		16" Stroke		24" Stroke		*Maximum Depth of Well Feet
	Rev.	Gals.	Rev.	Gals.	Rev.	Gals.	
2¾	40	10.2	35	14.3	28	17.2	300
3¾	40	19.1	35	26.7	28	32.1	175
4¼	40	24.5					190
4¾			35	42.9	28	51.5	130
5¾			35	62.9	28	75.4	120
6¾					28	104.	60
7¾					28	137.2	45

*Refers to vertical distance from lowest surface of water in well to highest point of delivery .

Fig. 80, with Differential Plunger

This is a vertical type of working head, designed for use in wells up to 540 feet deep. Fig 62 is intended for use in wells up to 300 feet deep. We recommend that our Fig. 324 brass artesian well cylinder be used with these heads.

The illustrations represent the heads with Type "B" Drive.

Fig. 80, Sizes, Etc.

Stroke Inches	Maximum Diam. of Pipes		Gear Ratio	Tight and Loose Pulleys
	Suction Inches	Dischg. Inches		
16	9	4	6 to 1	28x6
24	9	4	5¼ to 1	36x6

Fig. 80.

Maximum Speed and Capacity per Minute with Fig. 324 Cylinder.

Diam. of Cylinder Inches	16-Inch Stroke		24-Inch Stroke		*Max. Depth of Well Feet
	Revs.	Gallons	Revs.	Gallons	
4¼	35	34	28	41	540
4¾	35	42	28	51	450
5¼	35	52	28	63	360
5¾	35	62	28	75	300
6¼	35	74	28	89	250
6¾	35	86	28	104	210
7¾	35	114	28	137	150
8½	35	137	28	164	130

See Next Page.

DEMING DOUBLE ACTING POWER PISTON PUMPS

FOR SERVICE AS GATHERING PUMPS

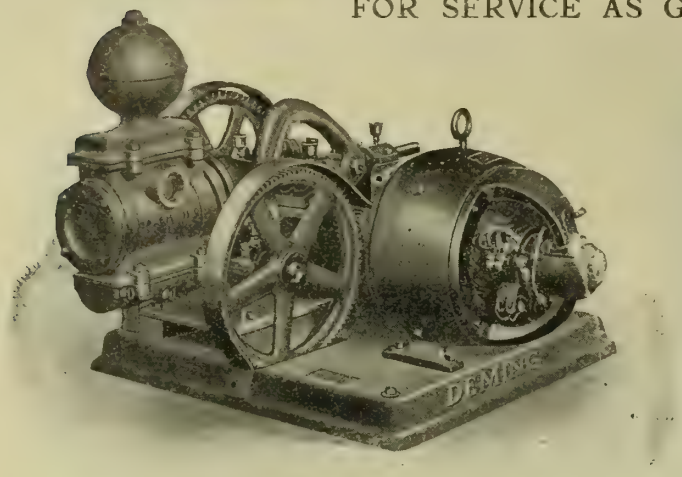


Fig. 609, "Triumph," with Type "B" Drive.

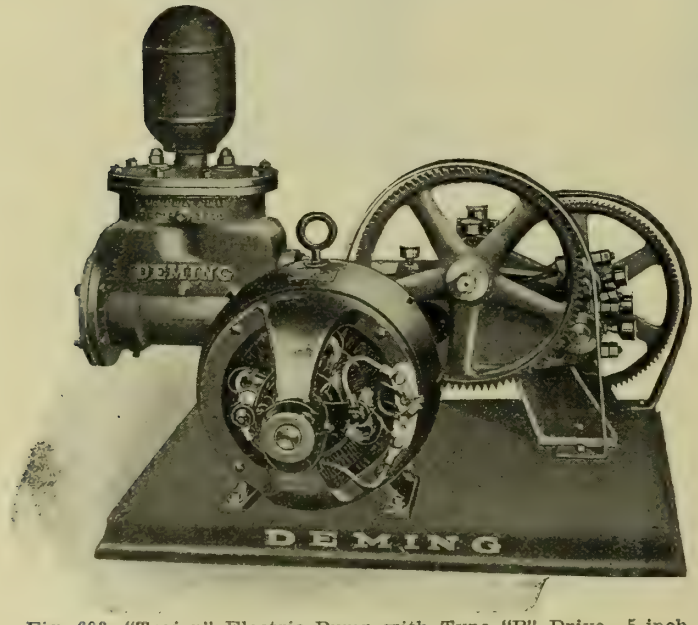


Fig. 693, "Trojan" Electric Pump with Type "B" Drive—5-inch and 6-inch Stroke. (Piston Type.)

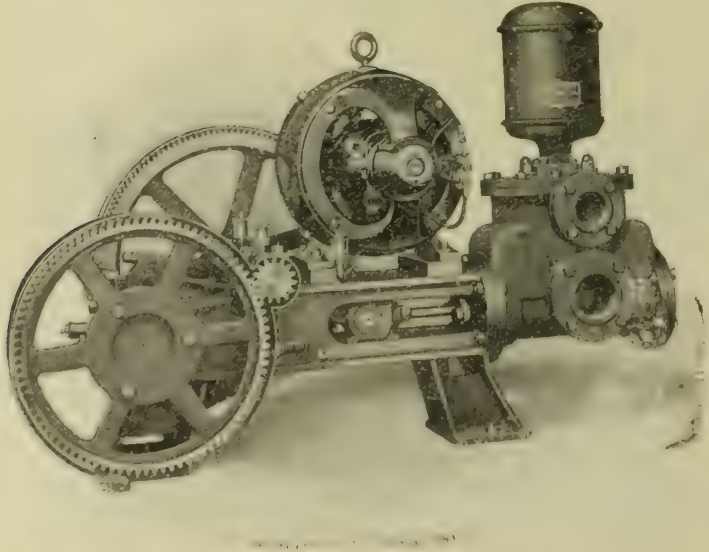


Fig. 693, "Trojan" Electric Pump with Type "BA" Drive 10-inch Stroke.

General Statement

The pumps illustrated on this and the opposite page are intended for use as gathering pumps for rooms, headings, etc., and are especially adapted for this service. They can also be used to good advantage for general water supply. They may be furnished with either brass lined cylinder or with solid bronze water end. **All gears are carefully guarded. Type "B" Drive** includes sub-base on which both pump and motor are mounted and gearing connection between pump and motor. **Type "BA" Drive** consists of pump with gearing connection for electric motor and with the main frame altered to permit of mounting the motor on top of pump, thereby economizing space. **We can furnish motor or gasoline engine if desired.**

The "Triumph," Fig. 609

Valves: are bronze and in one piece, with stems giving large and free openings.

Gears: are machine cut.

Capacities: from 7 to 30 gallons per minute.

Can be mounted on any ordinary mine truck. The 30-gallon pump is good for a maximum head of 100 feet.

Pistons		Capacity			Maximum Head, Feet	Diam. of Pipes	
Diam. Inches	Stroke Inches	Gals. per Rev.	Usual Revs. per Min.	Gals. per Min.		Suction Inches	Dischg. Inches
2½	4½	.19	40	7.6	200	1¼	1¼
3	4½	.27	40	10.8	160	1½	1¼
4	4½	.48	40	19.2	130	2	1½
5	4½	.76	40	30.4	100	2½	2

Gear Ratio 5 to 1.

The "Trojan," Fig. 693

Capacities: from 25 to 200 gallons per minute and for heads 150 feet or less.

Cylinders: are lined with brass or anti-acid bronze as specified, or pumps can be furnished with solid bronze water ends.

Gears: are machine cut.

Valves: are readily accessible from the top and bottom. They may be lifted through the discharge deck. Valve seats are set in firmly and without the use of threads.

Valve areas are exceptionally large.

Six Inch Stroke Pumps: usually have the motor mounted on the base beside the pump.

Ten Inch Stroke Pumps: usually have the motor mounted on top of the pump, making the outfit lighter in weight, besides keeping motor well above any water near the pump.

Gears: are machine cut.

Approximate Size of Motor Recommended.

Size Cyl.	Motor	Size Cyl.	Motor
5x5	5 H. P.	6x10	7½ H. P.
5x6	5 H. P.	7x10	10 H. P.
6x6	7½ H. P.	8x10	10 to 15 H. P.

Fig. 693, Standard Sizes, Capacities, Etc.

Pistons		Cap. per Rev., Gals.	Revs. per Minute	Cap. per Min. at Max. Speed, Gals.	Diameter of Pipes	
Diam. Inches	Stroke Inches				Suction Inches	Dischg. Inches
3½	4	.325	50 to 60	19.50	1½	1¼
4	5	.534	50 to 60	31.04	2	1½
5	5	.833	50 to 60	49.98	2½	2
5	6	1.000	45 to 55	55.00	3	2½
6	6	1.448	45 to 55	79.64	3	2½
6	10	2.395	40 to 50	119.75	4	3
7	10	3.279	40 to 50	163.95	5	4
8	10	5.275	40 to 50	263.75	6	5

Gear Ratio 6 to 1. Head—150 Feet.

DEMING DOUBLE ACTING POWER PISTON PUMPS

FOR SERVICE AS GATHERING PUMPS

The "Neptune," Fig. 696

Capacities: 50 to 120 gallons per minute.

Valves: are of the pot valve type. They are quickly accesible from the top by loosening two nuts.

Cylinder: is bronze lined, but pump can be furnished with solid bronze water end if necessary.

This is an exceptionally good piston pump for coal mine service. Below we give the approximate size of motor recommended.

Size Cyl	Motor
5x5	5 H. P.
5x6	5 H. P.
6x6	7½ H. P.

The above is based upon a head of 150 feet.

Fig. 696, Sizes, Capacities, Etc.

Pistons		Cap. per Rev., Inches	Rev. per Min.	Cap. per Min. at Max. Speed, Gals.	Diameter of Pipes	
Diam. Inches	Stroke Inches				Suction Inches	Dischg. Inches
5	5	8.33	50 to 60	49.98	2	2
6	6	1.448	45 to 55	79.64	3	2½
6	10	2.395	40 to 50	119.75	4	3

Gear Ratio 6 to 1. Maximum Head—150 Feet.

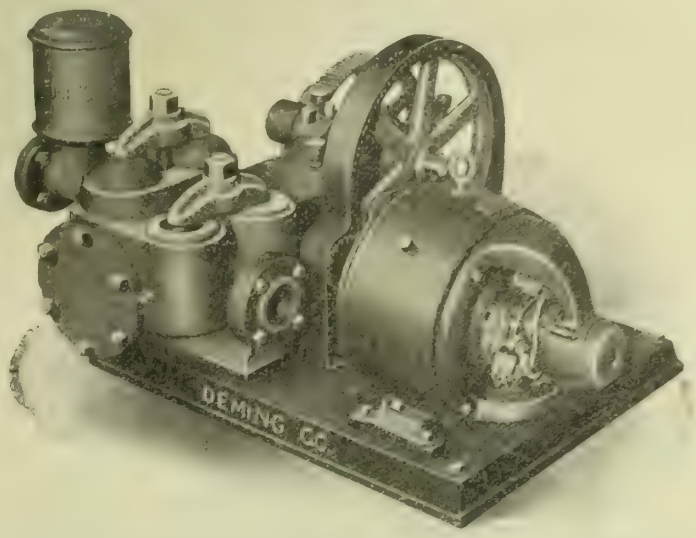


Fig. 696, "Neptune" Electric Pump, with Type "B" Drive. (Piston Type)

The "Vulcan," Fig. 604

Capacities: 13 to 65 gallons per minute.

Valves: are accessible without disturbing the pipe connections. Valve areas are large.

This is a stronger pump than the "Triumph," "Trojan," "Ajax," or "Neptune," as it is good for 250 feet total head.

Fig. 604, Sizes, Capacities, Etc.

Pistons		Cap. per Rev., Gals.	Revolutions per Minute	Cap. per Min. at Max. Speed, Gals.	Diam. of Pipes	
Diam. Inches	Stroke Inches				Suction Inches	Dischg. Inches
3	4½	.263	40 to 50	13.15	1½	1¼
4	4½	.479	40 to 50	23.95	1½	1¼
5	5	.988	35 to 45	44.46	2½	2
6	6	1.436	35 to 45	64.62	3½	3

Gear Ratio 5 to 1. Maximum Head—250 Feet.

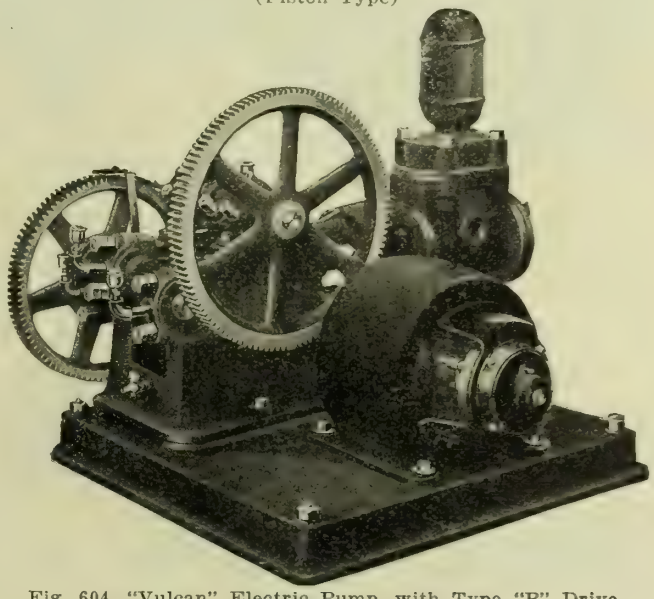


Fig. 604, "Vulcan" Electric Pump, with Type "B" Drive. (Piston Type)

The "Ajax," Fig. 716

Capacities: 30 to 215 gallons per minute.

Valves: are very easy of access. They are rubber on bronze grid seats, which are screwed into the decks.

This is a splendid pump for mine service. Below are given the approximate sizes of motors recommended.

Size Cyl.	Motor	Size Cyl.	Motor
4x5	2 H. P.	6x10	7½ H. P.
5x5	5 H. P.	7x10	10 H. P.
5x6	5 H. P.	8x10	15 H. P.
6x6	7½ H. P.		

The above estimates are based upon 150-ft. total head.

Fig. 716, Sizes, Capacities, Etc.

Pistons		Cap. per Rev., Gals.	Revs. per Minute	Cap. per Min. at Max. Speed, Gals.	Diam. of Pipes	
Diam. Inches	Stroke Inches				Suction Inches	Dischg. Inches
4	5	.534	50 to 60	31.04	2	2
5	5	.833	50 to 60	49.98	2½	2
5	6	1.000	45 to 55	55.00	3	2½
6	6	1.448	45 to 55	79.64	3	2½
6	10	2.395	40 to 50	119.75	4	3
7	10	3.279	40 to 50	163.95	5	4
8	10	4.275	40 to 50	213.75	6	5

Gear Ratio 6 to 1. Maximum Head 150 Feet.

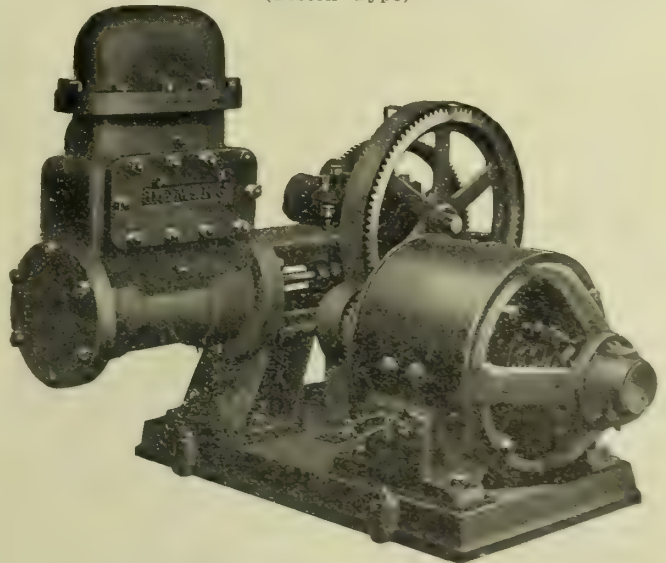


Fig. 716, "Ajax," with Type "B" Drive.

ESTABLISHED 1877

DUBOIS IRON WORKS

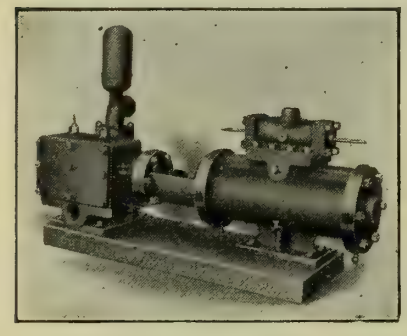
DUBOIS, PA.

MANUFACTURERS OF

STEAM PUMPS, MOTOR DRIVEN PUMPS, BELT DRIVEN PUMPS and GASOLINE ENGINES

Dubois Steam Pumps

They have been designed with a view of furnishing a Mine and Boiler Feed Pump that will give the greatest efficiency, yet having the fewest possible number of working parts that will be subject to wear or breakage.



The working parts of the Steam end consist of the steam piston and a single piston valve which are entirley automatic in operation, the steam pressure being the only propelling force.

The Steam entering the valve chest passes immediately to the cylinder through the main port, forcing the piston the full length of its stroke and past a port leading to a by-pass that carries the steam to the opposite end of the valve, pushing it forward, thereby reversing the stroke.

The operation of the valve is thus fully assured, but at no time can it open or let steam into the opposite end of the cylinder until the piston has completed its full working stroke. This principle assures that the Pump will do its full duty and work at a uniform capacity.

Our efforts for "simplicity" have not been confined alone to the steam end of our Pumps, but every working detail of the water end as well has been carefully thought out as regards simplicity, effectiveness and ease of access.

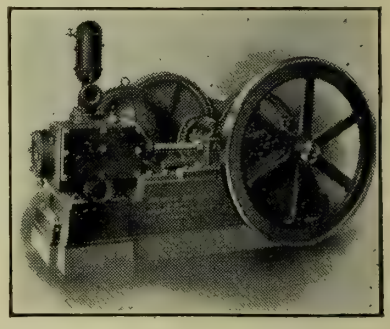
The water valves number four or more, according to the size of the Pump. Two valves are operated on one stem arranged one above the other, so that by unscrewing the plug on top of the valve chest and drawing out the stem both are released. The valves are made with extended guides, which assures even wear and square seating and affords perfect alignment. They are also instantly accessible for inspection on removing the flat side plates and without interfering in any way with the pipe connections or air chamber.

Motor Driven Pumps

Motor Driven Pumps offer many advantages and for some work are recommended as being more desirable than Steam Pumps. This particularly holds good where long transmissions of steam are entirely impractical, owing to the great losses due to condensation.

A Motor Driven Pump can be placed at any distance from the central power station and operated with maximum efficiency.

The DuBois is extremely simple in design. The water cylinder is the same as used on our Steam Pumps and is operated from the motor through intermediate spur gearing, a crank shaft and connecting rod. All gears are cut and will therefore operate with the least possible friction and noise.



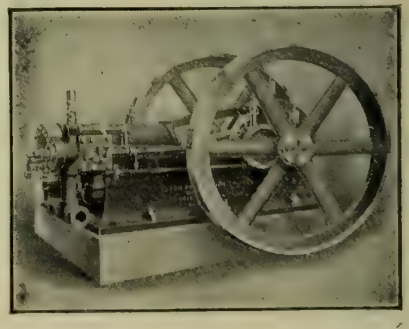
To give perfect alignment between Pump and Motor the complete outfit is mounted on a cast iron base, giving substantial foundation for the Motor crank shaft and gearing.

Belt Driven Pumps

DuBois Belt Driven Pumps are the result of years of experience in Pump building and the same careful attention to detail in design that characterizes all DuBois products. It is of the same general construction as our Motor Driven Pumps, the only difference being that it is equipped with belt pulleys in place of main drive gear. It will be found a thoroughly dependable Pump for the most severe service.

Gasoline Engines

The essentials for a practical and durable Gas or Gasoline Engine are simplicity of design, perfectness of construction, absolute governor control and sufficient weight to withstand the continuous high pressure of explosions they are subjected to.



In designing the DuBois these features have been closely maintained regardless of expense, and the finished product stands out prominently in compactness, simplicity and weight over other makes.

When in need of a Gasoline Engine to operate a Pump or Fan, or for other power about your mines, investigate the DuBois, paying especial attention to the valve operation, governor, auxiliary exhaust and igniters, as these are important points to consider in the selection of an Engine.

EPPING-CARPENTER PUMP CO.

ESTABLISHED 1866.

Manufacturers of Steam, Power & Centrifugal Pumps

HIGH DUTY PUMPING ENGINES AND CONDENSERS

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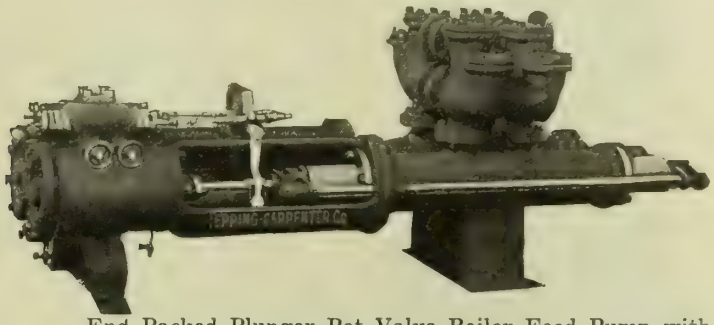
102 Epping-Carpenter Piston Pattern Pumps.

103 Epping-Carpenter Center Packed Plunger Pumps.

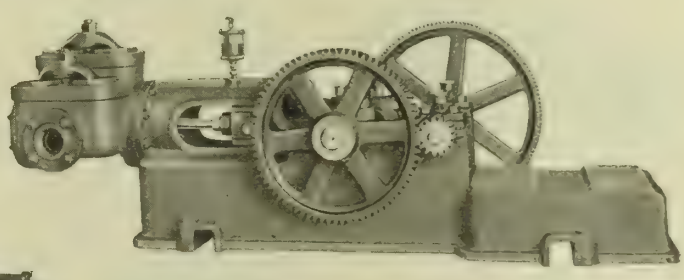
104 Epping-Carpenter Outside End Packed Pot Valve Pumps.

105 Epping-Carpenter Boiler Feed Pumps.

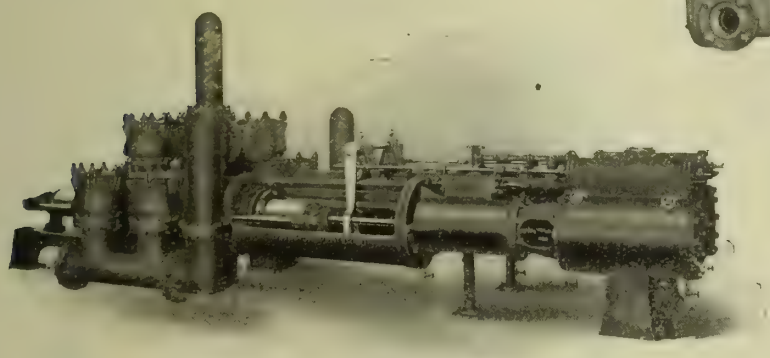
106 Epping-Carpenter Hydraulic Pressure Pumps and Accumulators.



End Packed Plunger Pot Valve Boiler Feed Pump with Patented Balanced Piston Steam Valves and Outside Lost Motion Adjustment.



BULL DOG Electric Driven Mine Gathering Pump.
GEARS TOTALLY ENCLOSED.

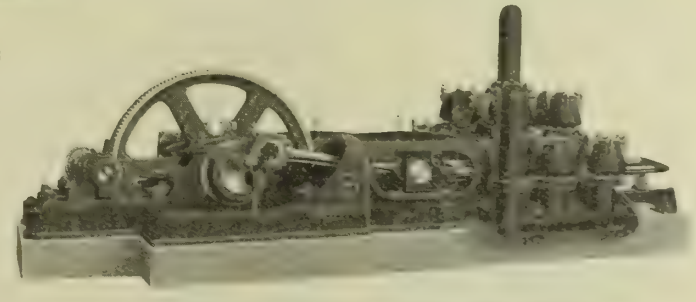


Steam Driven Mine Pump. Compound Steam Cylinders with Piston Valves—Wood Lined.

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High Efficiency Electric Driven Mine Pump.
Herringbone Gears. Wood Lined.

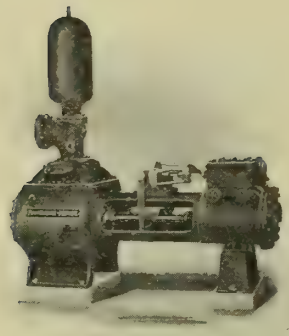
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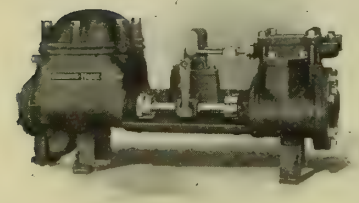
Designers and Builders of

Steam Pumps for all Classes of Service, and Complete Line of Reciprocating and Centrifugal Power Pumps.



Steam Pumps for General Service Against Discharge Pressures Up to 150 Lbs.

These steam pumps are of the plunger-pattern, duplex double-acting, and are made simple or compound. In this type, suction valves are placed in a deck below the piston, and discharge valves above, giving direct passage for liquid so that piston speed may be very high without excessive hammering. Capacities to 2088 G. P. M.



Boiler-Feed Pumps, Duplex Piston Pattern, for Boiler Pressures Up to 150 Lbs.

These pumps are made in sizes up to 10″x6″x12″ for boilers to 1400 H. P. Fitted with soft or medium rubber valves, or with brass or hard rubber valves for hot water.



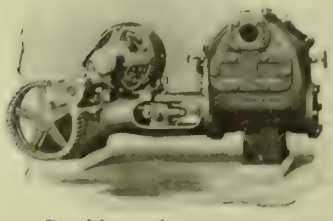
Boiler-Feed Pumps, Duplex Ram Pattern, for Boiler Pressures Up to 175 Lbs.

Especially adapted for handling water at a high temperature, or water containing sand or grit, also for high pressure boiler feeding. As plungers are outside-packed and always in sight, adjustment or replacing of packing is easy. Sizes to 12″ x 7″ x 10″ for feeding boilers up to 1700 H. P.



Slush Pumps for Severe Service

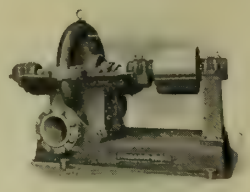
Built especially for work of pumping liquids containing sand, gravel, mud, rock drillings or gritty or corrosive material against high pressures. These pumps meet satisfactorily the exacting requirements in connection with rotary drilling. Made in sizes to 12″ x 6¾″ x 12″, having capacities to 298 G. P. M.



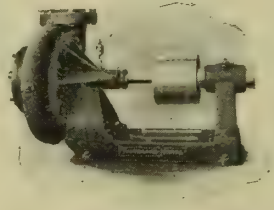
Power Pumps, for Belt, Engine or Electric Drive.

Made in many types and capacities with pulley for belt drive, or constructed as unit with gasoline or oil engine, or direct or alternating-current motor. Duplex piston-pattern pumps are built in capacities to 1600 G. P. M. and for pressures to 150 lbs. Double-acting pumps geared to oil engines are supplied in capacities to 494 G. P. M. for pumping against heads up to 360 ft.

Centrifugal Pumps, Single Stage—Double Suction — for High Heads.



Adapted for all kinds of service where liquid is to be pumped against heads of 150 ft. or higher, and especially suited to mining or other excavation work. Horizontally split casing permits removal of impeller or shaft without disturbing any pipe connection. Double-suction impeller does away with end thrust, permitting pump to be used with higher heads than would otherwise be safe. Capacities to 4500 G. P. M.

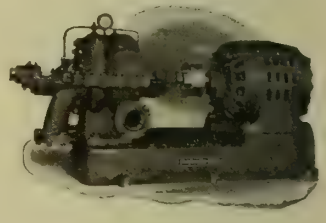


Single Stage—Side Suction—for Moderate Heads.

Suited for drainage or pumping from excavations against heads up to 75 ft. Capacities up to 4500 G. P. M.

Multi Stage — for High Heads.

Supplied in several types and capacities.





Single Stage—Side Suction —for Heads to 125 Ft.

Designed for heavy, continuous service, especially where any interruption would be of serious consequence. Shell is extra heavy. Pump is automatically balanced, doing away with end thrust. Bearings are located outside of the glands; stuffing boxes are water-sealed. Capacities to 4500 G. P. M.



Sngle and Multi-Stage Vertical Pumps.

Vertical centrifugal pumps are preferred in many cases because of their ability to run submerged as well as under suction lift. Our line of vertical pumps is ruggedly constructed to withstand readily the severe service required of this type of pump. Impellers are of the self-regulating type to prevent serious overloading under varying heads. Bearings are extremely long, and are removable. Glands are water-sealed, and pump is hydraulically balanced to eliminate end thrust. Made in several types for pumping against moderate and high heads and in capacities up to 5500 G. P. M.



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COAL MINE EQUIPMENTS

Fairmont Portable Electric Mine Pump

We are the originators of the Mounted Portable Electric Pump for gathering purposes in coal mines. Capacity and quality unequaled at the price, and more gallons pumped per dollar of expense for power and repairs. Four years of success.

We lead—others follow.



5" Cylinder; 4½" Stroke; 2½" Suction; 2" Discharge.

The above illustration shows an ideal outfit for mine use. The total weight, including wheels and axles, is only 1500 lbs., and exclusive of wheels and axles 1100 lbs. (Can be lifted off of axles and set to one side.)

Over-all height above top of rail, with 14-inch wheels for truck, is 41 inches. On 10-inch wheels 39 inches.

The pump and all parts are strongly constructed throughout (especially for mine use), and put out under our usual guarantee of satisfaction or no pay.

This is, by all means, the neatest and cheapest outfit on the market today, and you cannot afford to let the opportunity go by of giving it a trial.

We use General Electric type, N. C. or C. V. C. Self-Starting Motors, and no starting rheostat is needed. Whenever the current goes off for a few minutes it is not necessary, with this arrangement, to send a man in to start the pump when the current comes on again. Any mine superintendent can appreciate this convenience.

Special Features in "Fairmont" Pump

Crank Shaft—steel, drop forged.

Yoke—cast steel, annealed.

Connecting Rod—malleable iron, brass bushed on both ends.

Piston Rod—bronze, with bronze nuts.

Cylinder Liner—¼-inch thick, acid-resisting bronze.

Valves—acid-resisting bronze.

Valve Seats—acid-resisting bronze.

Stuffing Box—acid-resisting bronze.

Drain Plugs—acid-resisting bronze.

Plunger Irons—acid-resisting bronze when conditions require.

Standard Irons—are cast iron.

Motor Pinion—forged steel, cut teeth.

All Other Gears—cast iron with cut teeth.

Gears—are properly guarded.

Bearings—are cast with oil chamber, thus eliminating the use of oil cups, which are always easily broken off.

Bronze Water End—complete for severe conditions.

Motor—two or three H. P., as desired by purchaser, any voltage.

RESULTS OF ACTUAL TESTS

Speed of Motor 1100 r. p. m., Pump Gear 100 teeth.

No. Teeth in Motor Pinion	R. P. M. of Crank	Volts	Amp.	H. P.	Gal. per Min.	Head in lbs.	Head in ft.
15	59	230	8.5	2.62	35.33	50	115.5
"	59	230	6.0	1.85	41.34	30	69.3
"	72	234	3.5	1.10	46.77	1.72	4.0
17*	67	230	9.6	2.97	40.04	50	115.5
"	67	230	6.8	2.10	46.85	30	69.3
"	82	230	4.0	1.25	53.01	20	46.2
21	78	230	3.0	4.00	50.03	50	115.5
"	78	234	9.0	2.82	56.03	30	69.3
"	82	230	8.0	2.47	59.56	20	46.2
"	85	230	6.5	2.00	62.81	15	34.6

* Standard Gear Ratio.

In making above tests the discharge line consisted of 20 feet of 2 inch pipe with three elbows and two globe valves

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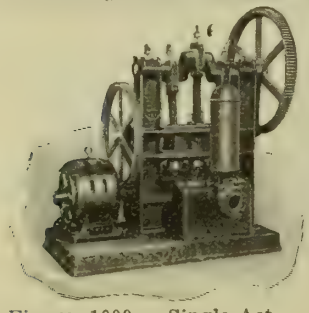


Figure 1009. Single-Acting Triplex Pump with Gear-Connected Motor.

Single-Acting Triplex Plunger Pumps—Outside Guided.

Fig. 1009 is a small and moderately large capacity type for unwatering mines, suitable for elevations up to 350 feet. Furnished in capacities up to 350 gals. per minute. Can be furnished with tight and loose pulleys for belt drive or for gear or direct connection to the driving motor. See Bulletin 101.

Fig. 1585 is a high pressure type made for elevations of 230 to 3500 feet and for capacities of 51 to 1152 gals. per minute. It can be equipped for any of the Standard methods of connecting to the driver. Bulletin 103.

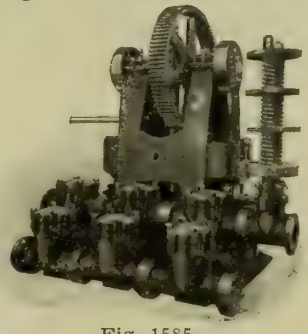


Fig. 1585.

Double-Acting Triplex Plunger Pumps

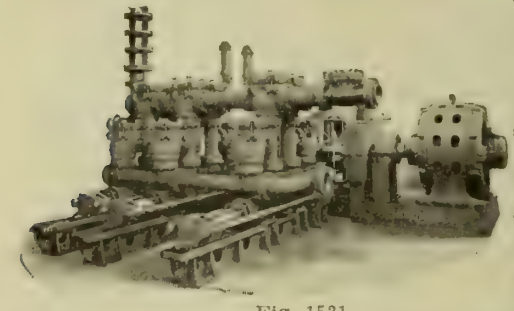


Fig. 1521.

Fig. 1521 is a horizontal type double acting pump, made in large capacities for high elevations. Can be supplied to meet almost any conditions. Designed so that when installing parts can be lowered down an ordinary mine shaft. Bulletin 115. Vertical type double-acting piston pumps for low elevation, large capacity service described in Bulletin 104.

Centrifugal Pumps

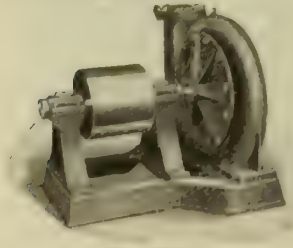


Fig. 3000.

Figure 3000 is a single-stage single side suction centrifugal pump, suitable for elevations up to 100 feet including pipe friction head. Its extreme simplicity makes it especially suitable for mine service. Can be furnished with pulley for belt drive as shown, or for direct connection to electric motor. See Bulletin 105.

Fig. 3030 is an extra high grade single stage double suction centrifugal pump for elevations up to 150 feet including pipe friction head. Fully described in Bulletin 110.

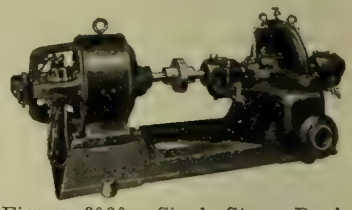


Figure 3030. Single-Stage Double Suction Centrifugal Pump with Direct Connected Motor.

Fig. 3300 is a multi-stage centrifugal pump suitable for elevations up to 700 feet. Built in 2, 3, 4 and 5 stages and 4, 5, 6 and 8 inch sizes with capacities ranging from 200 to 1500 gallons per minute.

Described in Bulletin No. 120.



Figure 3300. No. 4, Three-Stage Direct Connected to Electric Motor.

Portable Triplex Electric Sump Pumps.

Fig. 1637 is a portable triplex pump with outside guided plungers for unwatering mine sumps. Has all-iron truck with adjustable axles, which can be used on any gauge track. For heads up to 500 feet. Capacity 65 gals. per minute. Can be used as station pump by mounting on bed-plate instead of on truck.

Write for further information.

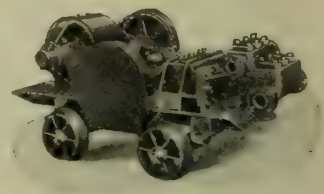


Fig. 1637.



Fig. 1237. Duplex Electric Sinking Pump.

Sinking Pump.

Fig. 1237 is a sinking pump for service in mine shafts. All parts are so protected that the pump will withstand any amount of hard usage. Frame is provided with wrought iron hanging bars for suspending the pump in the shaft. Bulletin 109.



Fig. 470 "Challenge" Double Acting Force Pump.

Double-Acting Force Pump.

Fig. 470 is a type of hand pump used largely in mines for supplementary service. Made in five sizes, with capacities from .19 to 1.28 gals. per revolution. Will lift and force 100 to 150 feet. Can be furnished with two handles if desired.

Power Diaphragm Pump.

Fig. 1649 is a handy portable pump fitted with engine gear and pinion with small gasoline engine on either frame or truck. Is also furnished with pulley for belt drive and is then known as Figure 1642. Capacity 3,500 gals. per hour. Will lift 20 feet.

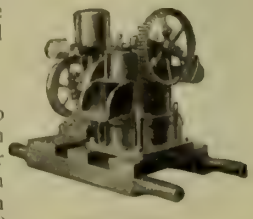


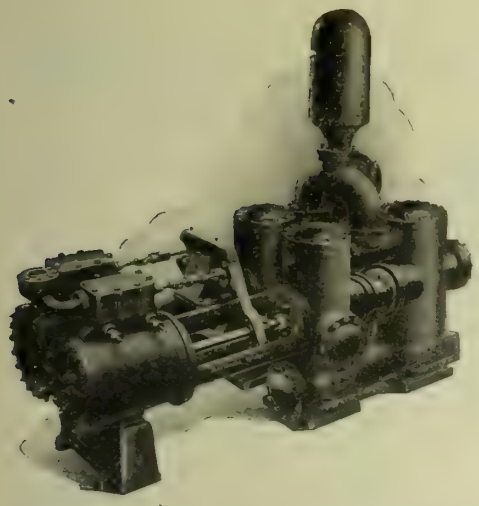
Fig. 1649. Power Diaphragm Pump

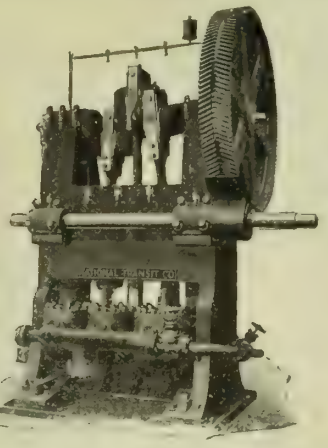
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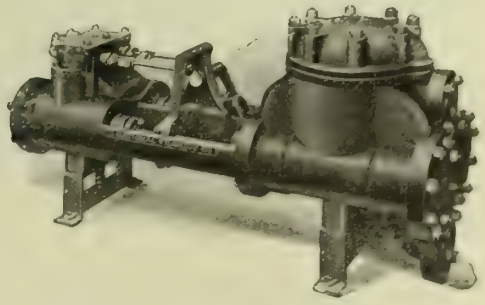
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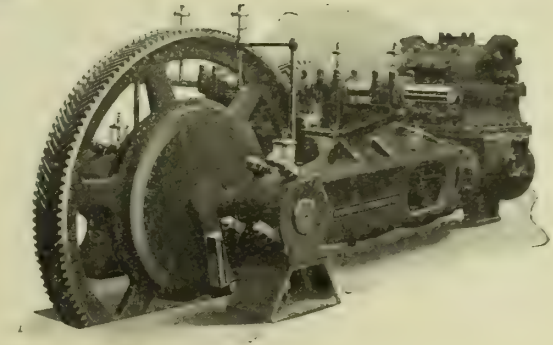
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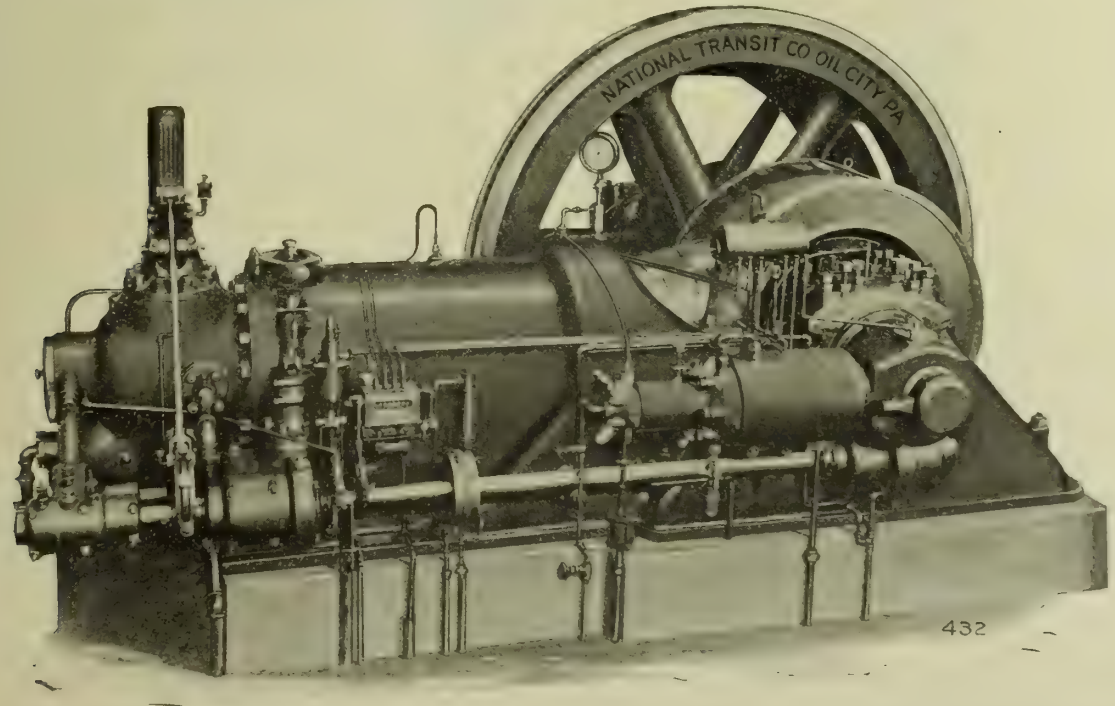
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Products

Centrifugal Pumping Machinery, Stationary and Marine Engines.

Centrifugal Pumps are furnished in nearly every conceivable type. Horizontal and vertical shaft pumps all arranged for belt, steam engine, steam turbine or motor drive. We show here only two types, both of which are well adapted to coal mine service. We are, however, well equipped to furnish High Efficiency, High Head, Horizontal Split Case and Multi-Stage Pumps when desired.

Improved Standard Horizontal Pump

The Standard Horizontal Pump, Fig. 16, is the type most extensively used for all purposes, and for general work is the best pump on the market. As a machine it is perfect. It is very strong and solid. It has large diameter shaft running in long bearings lined with best babbitt metal. The Pulley is large. Hub bearing is long and fitted with proper packing-gland. All parts are accurately machine fitted. The pump shown by cut is right-hand. It is furnished complete with all oilers and wrenches, and with suction and discharge flanges, threaded for standard wrought iron pipe, unless otherwise ordered. We furnish ring-oiling bearings when desired. These pumps are always kept in stock for immediate shipment.

All Centrifugal Pumps must be primed before starting, that is the entire suction line and the pump shell must be entirely filled with water. Pumps with hand primers can be furnished if desired.

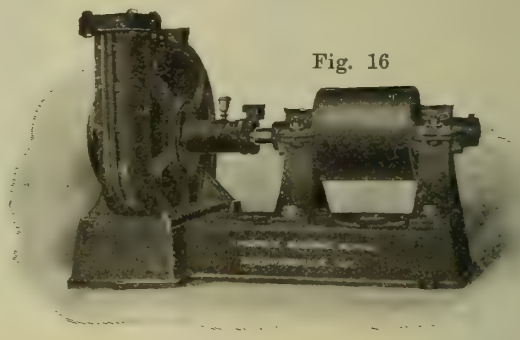


Fig. 16

These pumps are well adapted for coal mine service on low lifts and will handle small solids without difficulty.

Below we give a list of sizes and specifications, also speed table for this style pump. A separate speed table must be used for double suction pumps shown on opposite page.

MORRIS IMPROVED STANDARD IRON HORIZONTAL PUMPS—Fig. 16

No. Pump (Diameter Discharge Opening)	Size Pipe Flange on Suction, Inches	Economical Capacity in Gallons per Minute	Horse-Power Required for each Foot Elevation	Diameter and Face of Pulley, in Inches	Floor Space Required, in Inches, without Primer	Shipping Weight without Primer, Lbs.	Shipping Weight with Primer, Lbs.	Price Without Primer, per Fig. 16, Page 20	Price With Primer per Fig. 17, Page 22	Price Extra if Brass Fitted	No. Pump
1½	2	70	.058	6 x 6	17 x 31	175	220	$ 45	$ 60	$ 12	1½
1¾	2	90	.075	7 x 8	21 x 32	260	305	60	75	15	1¾
2	3	120	.10	8 x 8	23 x 37	350	415	75	95	18	2
2½	3	180	.15	8 x 8	24 x 38	360	430	90	110	22	2½
3	4	260	.22	8 x 8	25 x 39	415	495	110	135	25	3
4	5	470	.30	10 x 10	29 x 41	615	720	130	160	40	4
5	6	735	.45	12 x 12	34 x 54	940	1075	165	200	60	5
6	8	1050	.59	15 x 12	37 x 55	1180	1345	200	245	90	6
8	10	2000	1.00	20 x 12	45 x 64	2065	2430	310	375	130	8
10	12	3000	1.52	24 x 12	51 x 69	2610	2940	395	470	165	10
12	15	4200	2.00	30 x 14	63 x 71	3615	....	500	...	275	12
12*	12	4200	2.00	20 x 12	51 x 59	2800	....	500	...	...	12*
15	18	7000	3.50	40 x 15	77 x 80	8250	....	850	...	...	15
15*	18	7000	3.50	30 x 15	60 x 68	3350	....	710	...	...	15*
18	20	10000	4.50	40 x 16	93 x 103	9000	....	1300	...	...	18
18*	20	10000	4.50	30 x 16	66 x 72	5800	....	1150	...	...	18*

REVOLUTION TABLE—For Figure 16 Pumps

No.	5 Feet	10 Feet	15 Feet	20 Feet	25 Feet	30 Feet	35 Feet	40 Feet	50 Feet	60 Feet	70 Feet	80 Feet	90 Feet	100 Feet	No.
1½	428	604	739	854	955	1045	1131	1208	1351	1481	1599	1714	1813	1911	1½
1¾	348	491	601	695	777	850	920	982	1099	1205	1301	1394	1475	1554	1¾
2	272	384	472	545	607	665	720	773	858	940	1030	1085	1150	1215	2
2½	272	384	472	545	607	665	720	773	858	940	1030	1085	1150	1215	2½
3	272	384	472	545	607	665	720	773	858	940	1030	1085	1150	1215	3
4	230	364	447	515	574	630	680	727	812	890	960	1025	1085	1145	4
5	206	289	354	410	457	500	541	579	647	712	765	817	867	914	5
6	172	242	295	341	381	418	452	483	540	591	638	683	722	763	6
8	148	207	250	293	327	359	387	415	464	510	548	586	620	655	8
10	135	190	233	270	300	329	355	380	425	467	502	538	568	600	10
12	107	151	185	213	238	261	282	302	337	371	400	436	452	476	12
12*	206	289	354	410	457	500	541	579	647	712	765	817	867	914	12*
15	83	116	142	164	183	201	217	232	259	286	307	328	348	368	15
15*	121	171	209	241	270	295	319	342	382	420	451	483	511	539	15*
18	83	116	142	164	183	201	217	232	259	286	307	328	348	368	18
18*	121	171	209	241	270	295	319	342	382	420	451	483	511	539	18*

*Refers to Low-Life Pumps.

If pumps are run at above speeds they will deliver quantities of water stated in tables, and power required for driving will also be as stated in tables for each foot head.

If water is to be forced through long pipes or through many elbows, speed must be increased to correspond.

The above pumps can all raise water 100 feet, but should be made extra heavy for elevations above 60 feet, and for best results our high pressure type of pumps should be used.

Electric Double Suction Mine Pumps

Figures 46-F and 46-L show typical types of our Double Suction Electric Mine Pumps. We furnish this type of pump in sizes from one inch discharge to thirty-six inch according to requirements. Pumps are furnished in all iron and steel or bronze fitted having bronze shaft, impeller and gland, or all bronze where water is extremely bad.

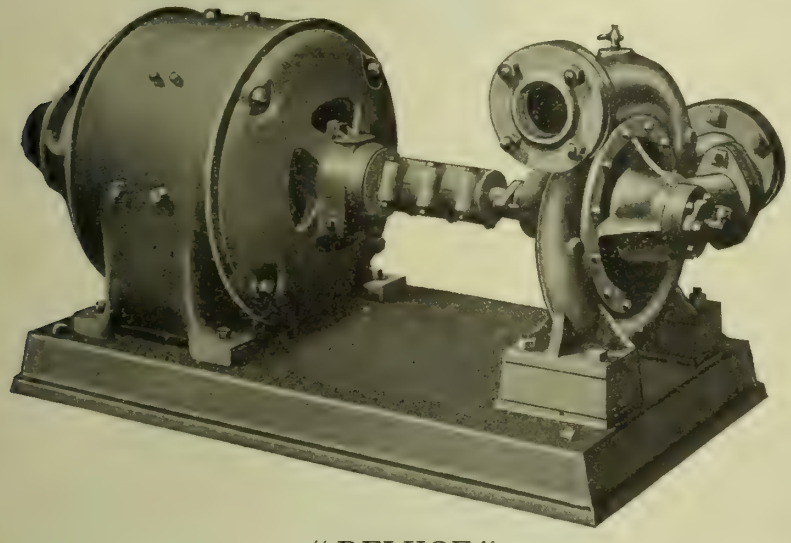
In our Double Suction Pumps the water enters the pump in equal quantities on each side of the impeller, thus eliminating all end thrust.

Care must be taken to see that pump including suction line is fully primed and all air pockets are eliminated.

"HANDY ANDY"



Figure 46-L, Showing Sizes 1¼ to 1¾.



"DELUGE"

Figure 46-F, Showing Sizes No. 2 to No. 3½ Pumps.

We recommend that pipe with a cross section area of at least double the size of suction and discharge openings be used where very much pipe is required.

With Centrifugal pumps the speed must be adapted to working conditions and operate with as little change as possible.

Care must be taken that no air gets into the pump thro the suction line or any other way, as it usually causes the pump to stop delivering any water even though motor operates at full speed.

Where pumps are required for elevations above 60 feet we prefer to recommend the proper pump, motor and speed to suit the particular conditions.

POWER REQUIRED BY FIG. 46 PUMPS, AND SPEED FOR DIFFERENT *ELEVATIONS

Pump No. (Diameter Discharge Opening)	Diameter Suction Opening Inches	Economical Capacity in Gallons per Minute	Approximate Shipping Weight Pounds	H. P. per Ft. Head	5 Ft.	10 Ft.	15 Ft.	20 Ft.	25 Ft.	30 Ft.	35 Ft.	40 Ft.	45 Ft.	50 Ft.	55 Ft.	60 Ft.
1	1½	30	135	.03	610	790	910	1040	1160	1260	1360	1450	1540	1630	1700	1770
1¼	1½	45	150	.04	610	790	910	1040	1160	1260	1360	1450	1540	1630	1700	1770
1½-A	2	65	175	.058	610	790	910	1040	1160	1260	1360	1450	1540	1630	1700	1770
1½	2	65	250	.058	410	530	610	700	780	845	920	980	1040	1100	1150	1200
1¾-A	2	90	200	.08	610	790	910	1040	1160	1260	1360	1450	1540	1630	1700	1770
1¾	2	90	300	.08	380	500	575	660	735	800	860	920	975	1030	1080	1125
2 -A	2½	120	350	.10	610	790	910	1040	1160	1260	1360	1450	1540	1630	1700	1770
2	2½	120	600	.10	285	375	430	495	550	600	650	695	730	775	810	840
2½-A	3	180	400	.15	610	790	910	1040	1160	1260	1360	1450	1540	1630	1700	1770
2½	3	180	650	.15	285	375	430	495	550	600	650	695	730	775	810	840
3 -A	4	260	450	.22	490	640	740	850	940	1040	1100	1180	1250	1325	1380	1440
3	4	260	850	.22	285	375	430	495	550	600	650	695	730	775	810	840
4 -A	5	475	500	.30	410	530	610	700	780	845	920	980	1040	1100	1150	1200
4	5	475	900	.30	272	355	410	470	525	565	615	655	690	735	765	800
5 -A	6	750	900	.45	272	355	410	470	525	565	615	655	690	735	765	800
5	6	750	1400	.45	245	320	365	420	465	510	550	590	620	655	685	715
6 -A	8	1000	1200	.59	410	530	610	700	780	845	920	980	1040	1100	1150	1200
6	7	1000	2000	.59	204	266	305	350	390	425	460	490	520	550	570	600
7 -A	8	1300	1400	.80	410	530	610	700	780	845	920	980	1040	1100	1150	1200
7	7	1300	2200	.80	204	266	305	350	390	425	460	490	520	550	570	600
8 -B	9	1500	1500	.80	410	530	610	700	780	845	920	980	1040	1100	1150	1200
8 -A	10	2000	2300	1.00	272	355	410	470	525	565	615	655	690	735	765	800
8	9	2000	3000	1.00	175	230	264	300	335	365	395	420	445	475	492	512

*Elevations must include the friction losses with the actual elevations.

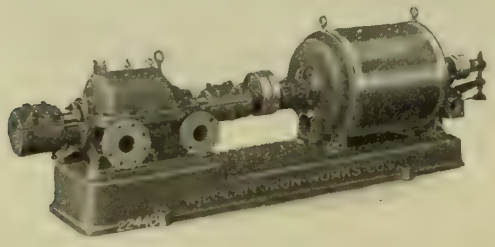
PLATT IRON WORKS

DAYTON, OHIO

Products

"Stilwell" Feed Water Heaters, Hot Water Service Heaters; "Smith-Vaile" Air Compressors, Steam Pumps, Power Pumps; "Platt" High Duty Pumping Engines, Centrifugal Pumps, Turbine Pumps; "Victor-Francis" Low Head Water Wheels, High Head Water Wheels, Tanks and Heavy Plate Work.

No matter whether they are installed under the most favorable conditions or in the most isolated parts of the world, Platt products are pre-eminent for quality and service.

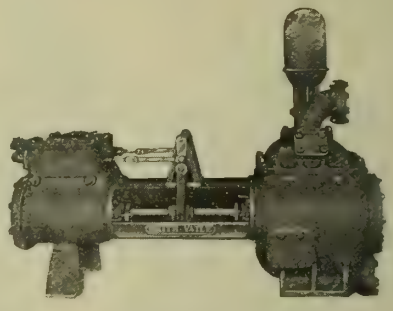


Platt Turbine Pump

Vertical or Horizontal, designed for resting upon fixed or portable foundations, to meet the required operating service.

Steam Turbine or Motor Drive.

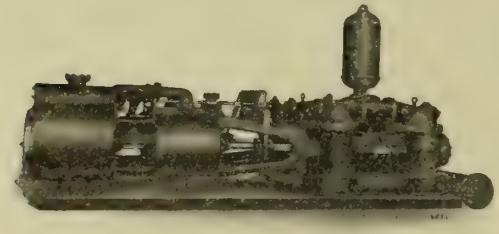
See Bulletin 755 for complete description.



Smith-Vaile General Service Pump

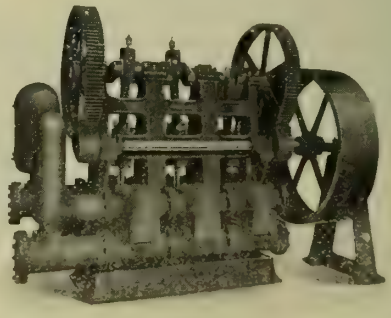
Inside packed piston type. Well designed in all points that materially contribute to its efficiency, durability and satisfactory operation.

Bulletin 780.



Smith-Vaile Compound Pump

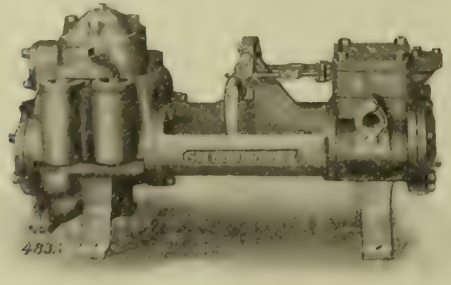
Built in either slide valve or piston type for any condition of service.



Smith-Vaile Double Acting Triplex Power Pump

Designed by skilled engineers of wide experience and built by high grade mechanics under careful and competent supervision.

Bulletin 741.



Smith-Vaile Special Yoke Type Boiler Feed Pumps

Provided with removable and interchangeable water cylinder linings and adjustable packed water pistons, permitting compensation for wear.

Bulletin 780.



Smith-Vaile Heavy Pressure Triplex Pump—Mine Installation

Bulletin 741 describes various installations of pumping machinery for mine service.

The Pneumelectric Machine Company

SYRACUSE, N Y

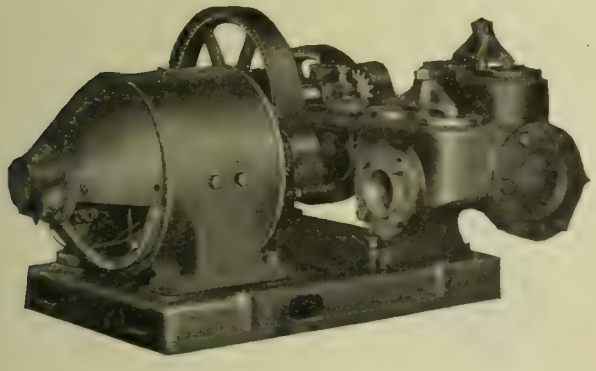
Pneumelectric
TRADE MARK

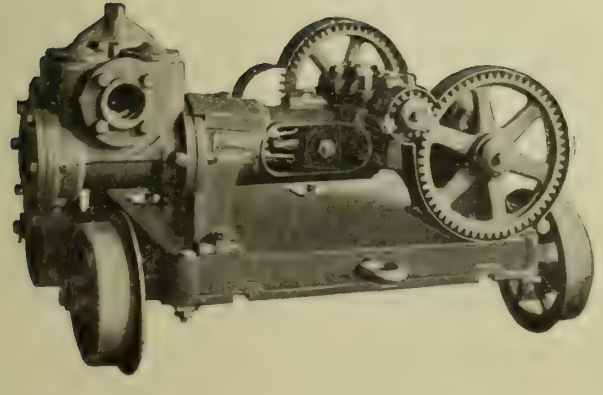
Electric Gathering Pump

Designed From the Experience of Many

The Pneumelectric Gathering Pump embodies the ideas of many practical mine men as to what a mine pump for gathering service should be.

It represents the use of materials based upon the most modern scientific investigations relating to the selection of the best materials for the service to be rendered. This being especially exemplified in the acid resisting metal that is used.





Special Features that Have Been Highly Developed

The design embodies extreme simplicity, accessibility, and construction that guarantees economical operation without interruption.

The lubrication of all bearings is made practically, automatic by means of felt wipers in oil reservoirs of ample capacity. This system assures positive lubrication at all times with the proper amount of oil, but at the same time, is most economical of the lubricant.

All bearings have replaceable bushings of highest grade bronze.

The cross head is of the high speed engine type with adjustable bronze shoes.

The crank shaft is a one-piece forging with all bearing surfaces ground to dimensions.

Service tests of long duration and under extreme conditions have demonstrated the superiority of the acid resisting metal of which the water end is made.

Motor

The Pneumelectric Gathering Pump is designed to be driven by a self starting motor, and can be furnished with any of the standard makes of 3 or 5 H. P. motors of this type.

Water End

For highly acid water, the solid bronze water end and fittings are recommended. For less severe water conditions, either a cast iron or a cast iron bronze lined water end can be furnished.

Capacity

Sixty gallons per minute, against 150 foot head, the pump being 5″x6″ double acting piston type.

Dimensions

Height—25″, Length—49″, Width—45″, Weight —850 Lbs. without motor; 1250 Lbs. with 3 H. P. motor.

WAGENER STEAM PUMP CO.

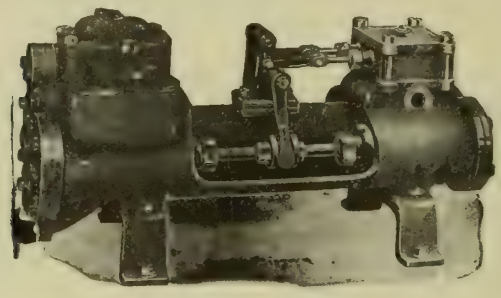
Works and Main Office at Canton, Ohio

Sales Agencies in Principal Cities

Steam Pumping Machinery for Mine Service

Products

We also manufacture a complete line of Simplex pumps, both piston and plunger design. Any pump can be furnished with all Anti-Acid water end when bad water is to be handled.



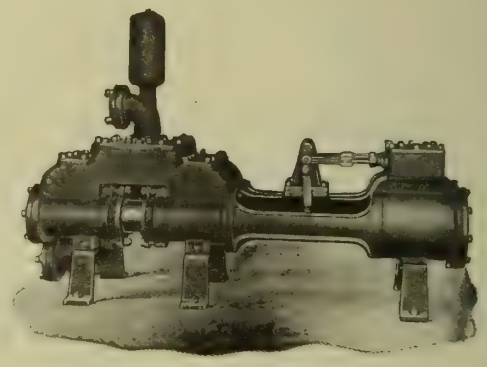
Cut No. 1—6x4x6

We illustrate in Cut No. 1 our Yoke pattern piston packed duplex pump. This pump has the suction valves located in separate chambers, making them directly accessible. Pump is equipped with genuine removable and interchangeable water cylinders. It is designed for a working pressure of 150 lbs. per square inch.



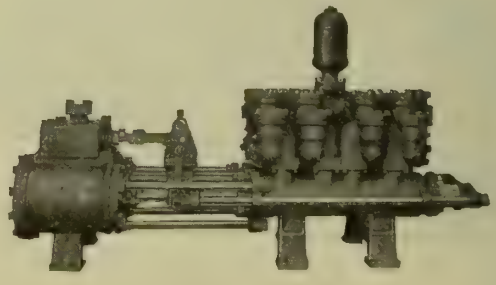
Cut No. 2—6x4x6

Cut No. 2 shows our "U" valve plate type of pump. This pump is standard brass fitted, being equipped with tubing brass linings in water end, brass piston rods in water end and steel rods in steam end. It is designed for working pressure of 150 lbs. per square inch.



Cut No. 3—10x6x10

Cut No. 3 illustrates our Plunger type Outside Center Packed pump. Note the accessibility to all valves. The stuffing boxes are extra deep. Piston rods are of the two-piece pattern, making separate steam and water end rods. It is designed for a working pressure of 225 lbs. per square inch.



Cut No. 4—14x6x12

Cut No. 4 illustrates our Pot Valve Plunger type of pump. Note that each valve pot is a separate casting. This is a very high grade pump for high pressure work. It is designed for a working pressure of 400 lbs. per square inch.

Write us about your pump troubles and we will cheerfully make our recommendations for your conditions.

Complete catalog will be gladly sent upon request.

WE HAVE BOTH QUALITY AND PRICE.

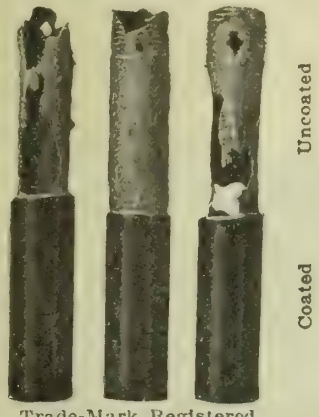
THE HIGHLAND CHEMICAL PRODUCTS CO.

CONNELLSVILLE, PA.

Highland Non-Corrosive Coating.

Products.

That trade-mark stands for something more than mere paint. It **guarantees** actual protection from corrosion, or we forfeit payment for it. Highland Non-Corrosive Coating (Nos. 1 and 2) holds corrosion in check on structural steel, roofs, sidings, air and water pipe, tanks, pumps, steel ties, steel mine timbers cars, trolley poles, conduits, fans, cages, and water hoists. It also prevents the disintegration of concrete. In brief, wherever corrosion flourishes it will curtail its damage. You may order it with the understanding that if you are not satisfied with results, you need not pay for the goods.



Trade-Mark Registered
United States Patent-Office

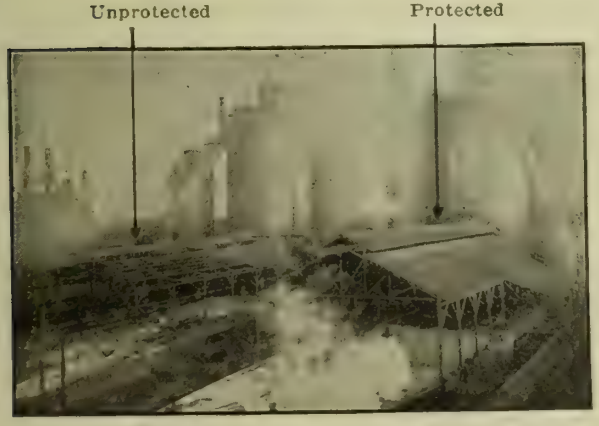
Protective Paints.

Highland Non-Corrosive Coating is of three grades.

No. 1.—Is for general structural iron painting, for lasting and entirely satisfactory results.

No. 2.—Is for pipe lines and other underground work where the surface coated does not come in contact with daylight.

No. 3.—Is for general structural iron painting, but is not guaranteed to give the lasting results obtained from No. 1. It is for buildings, roofs, stacks, etc., where the use of the highest grade paint is not justified.



The corroded roof was painted with ordinary paint. The other was coated five years previous with Highland Coating. The whole story of waste and economy is told by this actual example.

Highland Paint.

This paint is made to meet the demands for a low price paint and to protect our customers against inferior and injurious goods placed on the market as "secret process" or "newly discovered gums" with claims and guarantees that are impossible. Highland Paint is made from substantial materials, carefully selected, and will give satisfactory results. We can safely say it is the best that can be produced for the money.

A Copy of "The Sulphurette" is Yours—

Send for It.

"The Sulphurette—and It's Finish" is the title of a booklet that every mining man should have. It's full of boiled-down meaty, interesting facts.

It shows how corrosion causes losses, why it does and how to prevent it.

There's a copy here for you. Will you send a request for it today? If you have a special corrosion problem that's bothering you, ask us for the solution out of our wide experience in handling all manner of similiar problems. The service costs you nothing.



GENERAL ELECTRIC COMPANY

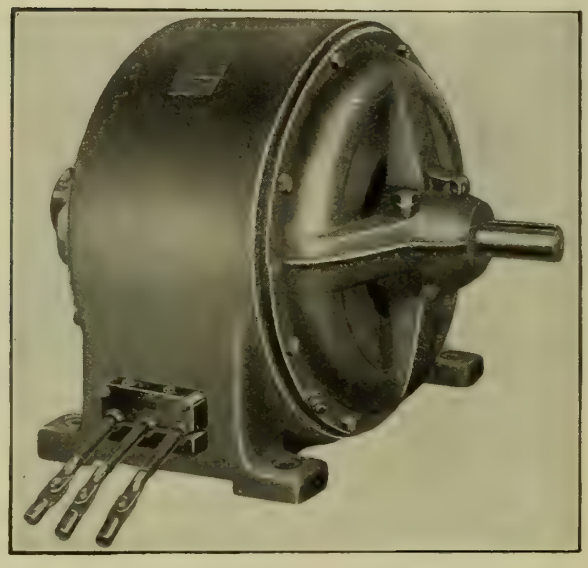
General Offices: Schenectady, N. Y.

The Guarantee on Goodr of Excellence Electrical

Sales Offices In All Large Cities

Electrical Equipment for Mines

G-E Motors Assure Reliable Operation



G-E Motors Withstand Operating Conditions

G-E Centrifugal Pump Motor.

Dripping water, moisture saturated air and infrequent expert inspection are conditions under which mine pumps must operate. To prevent flooding, absolute reliability of operation is demanded of these pumps.

The General Electric Company has designed a special line of motors which are fully protected from these operating conditions.

Moisture resisting windings within rigid box type frames give these motors the needed protection against water and humidity.

Split end shields and bearings increase the accessibility of these motors for inspection while ample bearing surface and capacious oil wells make frequent examination unnecessary.

Absolute reliability of operation for these motors is assured by the above features as well as their ample overload capacities and reliable oiling devices.

Electric welds used in G-E squirrel cage pump motors between each rotar bar and its end rings give a joint capable of withstanding any overload temperature up to the melting point of the copper rotar bars.

Reliability of operation is further assured by drum type controllers and resistance of the well known G-E maximum service types. Each of these devices is fully protected from the severe operating conditions found in mines.

In order to reduce the size of these motors to make them suitable for installation in small places, without reducing their power capacities, higher motor speeds than are usual with older types of G-E pump motors are used.

Both high efficiencies and power factors have been maintained.

WESTINGHOUSE ELECTRIC & M'F'G CO.

EAST PITTSBURGH, PA

SALES OFFICES

Atlanta, Ga.	Butte, Mont.	Columbus, Ohio.	*Houston, Tex.	Memphis, Tenn	Philadelphia, Pa.	San Francisco, Cal.
Baltimore, Md.	Charleston, W. Va.	Dallas, Tex.	Indianapolis, Ind.	Milwaukee, Wis.	Pittsburgh, Pa.	Seattle, Wash.
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Buffalo, N. Y.	Cleveland, Ohio.	*El Paso, Tex.	Los Angeles, Cal.	Omaha, Neb.	Salt Lake City, Utah.	Toledo, Ohio.
						Washington, D. C.

*W. E. & M. Co., of Texas.

Products

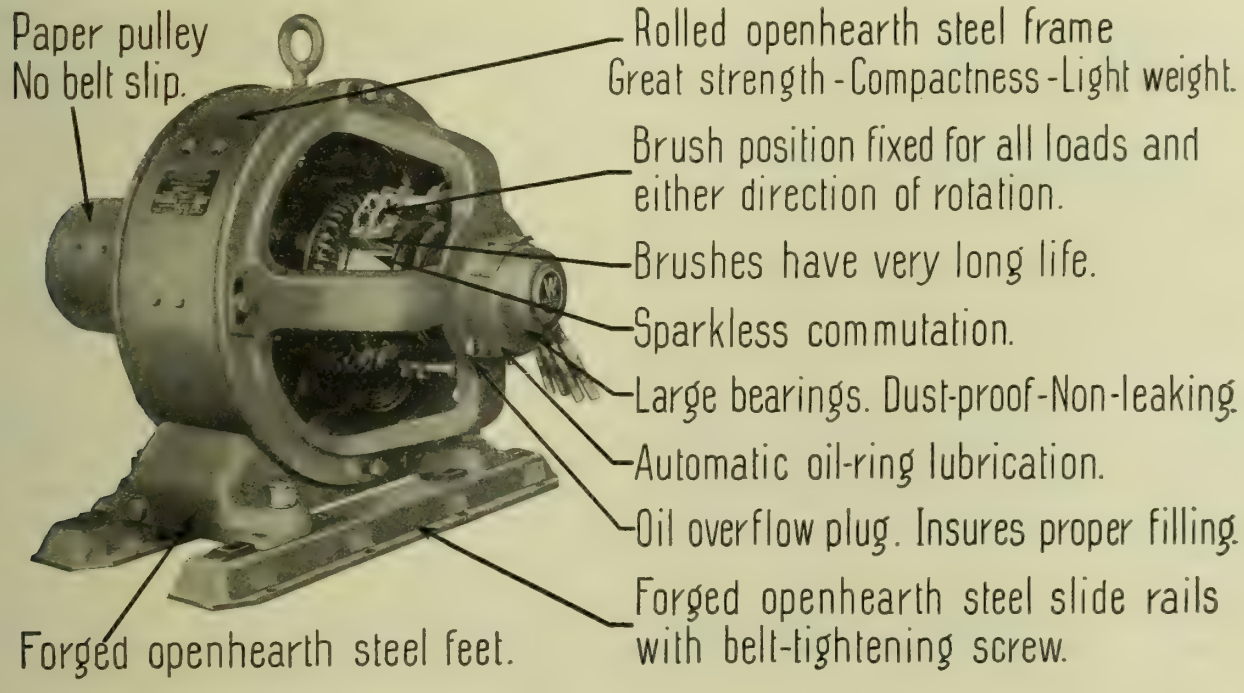
Electrical Equipments for all mining apparatus.

"The SK for Mine"

This is what the Superintendent, or Manager, who has used it says—

Because the following features make it the best motor for driving Pumps, Fans, Crushers, Hoists, Shaker Screens, Tools, Conveyors, Washers and Dumpers.

Write to a user and ask him how the SK is doing in his mine, tipple or shop.



Direct Current Type SK Motors

Shunt or Compound Wound. Open Type. Constant Speed

230 VOLTS.

H. P.	APPROXIMATE SPEED AT FULL LOAD.					
1½	900					
2	1200	850				
3 & 5	1800	1125	850			
7½	1700	1150	975	850	650	
10	1700	1300	1150	850	730	600
15	1700	1250	1100	825	675	600
20	1700	1100	900	750	650	
25	1400	1100	950	825	600	
30	1700	1150	975	725	600	
35	1700	1150	850	675		
40	1700	950	775	600		
50	1700	975	750	565		
60	1700	875	680			
65	575					
75	1700	1100	850	635	475	
85	540					
100	1700	1100	850	625		
120	720					
125	600					
150	1100	550				
200	850	500				
250	425					

550 VOLTS.

H. P.	APPROXIMATE SPEED AT FULL LOAD.					
2	1350	900				
3	1800	1200				
3½	900					
5	1800	1200	850			
7½	1750	1150	975	850	700	
10	1700	1300	1150	850	730	600
15	1700	1250	1100	825	675	600
20	1700	1100	900	750	650	
25	1400	1100	950	825	600	
30	1700	1150	975	725	600	
35	1700	1150	850	675		
40	1700	950	775	600		
50	1700	975	750	565		
60	1700	875	680			
75	1700	1100	850	635	475	
85	540					
100	1100	850				
120	720					
125	600					
150	1100	550				
200	500					
250	425					

A. M. BYERS COMPANY

ESTABLISHED 1864

PITTSBURGH PA.

23 Sullivan St., New York City 11 Sleeper St., Boston, Mass. 720 Fulton St., Chicago, Ill.

Akron	Brooklyn	Cleveland	Detroit	Knoxville	Milwaukee	Portland, Ore.	Savannah
Albany	Buffalo	Columbus	Duluth	Lansing	Nashville	Quincy	Seattle
Atlanta	Canton	Corpus Christi	Dunkirk	Los Angeles	Newark	Rochester	St. Louis
Bay City	Chattanooga	Dayton	Indianapolis	Louisville	New Orleans	Saginaw	Syracuse
Birmingham	Chicago	Decatur	Jacksonville	Memphis	New York City	San Antonio	Tampa
Boston	Cincinnati	Denver	Kansas City	Minneapolis	Philadelphia	San Francisco	Toledo

Union City, Ind. Utica Wheeling

Canadian Representatives: THE CANADIAN FAIRBANKS-MORSE COMPANY, Ltd.
Montreal Toronto Winnipeg Calgary Vancouver

BYERS GENUINE WROUGHT IRON PIPE

FULL WEIGHT GUARANTEED

Black and Galvanized. Sizes from 1-8 Inch Up to 12 Inch.

Guarantee

All Byers Pipe is guaranteed to be made from high grade pig iron, especially suitable for the purpose, refined by hand puddling, rolled into muck bar, cut, piled and re-rolled into skelp without the addition of scrap of any kind.

Every individual length of pipe is guaranteed to be full weight, with a variation of only 2½% or less below standard weight.

Inspection and Testing

The most rigid and thorough system of testing and inspecting is enforced from the ore to the finished product. Briefly, this includes: Analysis of ore; Analysis of Coke and limestone used in blast furnace; Analysis of pig iron; Individual test of the output of each puddling furnace daily; Inspection of every length of pipe immediately after cooling. Hydrostatic test after threading pipe; Inspection before shipment.

All Byers Pipe is made up to the same high standard. No Byers Pipe that does not pass all the tests is ever put on the market. It is therefore as perfect as it is commercially possible to make it.

Physical Characteristics

The Iron, as it comes from the puddling furnace, consists of small semi-plastic iron globules, thinly coated with slag or cinder. In rolling, the globules become elongated into long, fine slag-coated fibres.

Resistance to Corrosion

The great resistance to corrosion of Byers Pipe, is due to the protection afforded by the fine layers of slag or cinder, which is practically impervious to corrosion.

Fabrication

Due to its softness, as well as its fibrous structure, Byers Pipe is easily bent, cut and threaded. The fabricating cost is very small, and the joints uniformly tight. For this reason alone, it pays to use Byers in preference to cheaper grades of pipe.

Ultimate Cost

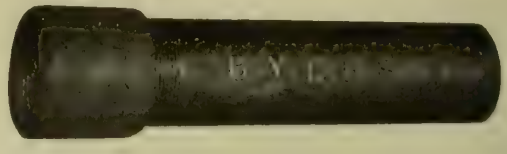
The Life of Byers Pipe is estimated to be about three times that of steel. The repair cost is very small, due to clean threads, tight joints, uniformly good welds and the great toughness of the pipe. The slightly higher first cost of Byers is therefore actually the best kind of economy.

Galvanized Pipe

The galvanized coating on Byers Pipe is from 75 to 90% heavier than the coating on the best galvanized steel pipe. It is applied by the superior hot process in the model new Byers galvanizing plant.

Marking

Rule—Several feet apart on every length of pipe the BYERS name is rolled in raised letters.



Exceptions—Small sizes, including ⅛" Regular and Extra Strong and ¼" Extra Strong do not have the BYERS name rolled in the metal, but are bundled and identified by a tin tag having the BYERS name embossed across the top.

Couplings—Heretofore, couplings have had the BYERS name rolled in the metal, but due to the common practice of using these couplings in conjunction with cheaper grades of pipe—often to deceive purchasers—it has been decided, from April 1st, 1915, to furnish the couplings plain.

Write for the name of the Byers Dealer in your District. He can supply you immediately.

CAST IRON PIPE MAKERS

The following makers of Cast Iron Pipe are Independent of each other and competitors; inquiries may be sent to any or all of these with assurance of prompt and full response:

American Cast Iron Pipe Co.
Birmingham, Ala.

James B. Clow & Sons
Chicago, Ill.

Donaldson Iron Co.
Emaus, Lehigh Co., Pa.

Glamorgan Pipe & Foundry Co.
Lynchburg, Va.

Lynchburg Foundry Co.
Lynchburg, Va.

Massillon Iron & Steel Co.
Massillon, Ohio

U. S. Cast Iron Pipe & Fdry. Co.
Philadelphia, Pa.

Products

Cast Iron Bell and Spigot and Flanged Pipe and Fittings for Water and Gas; Flexible Joints for Submerged Lines; High Pressure Pipe and Specials for Fire Service; Plain End and Threaded Cast Iron Pipe; Cast Iron Culverts, Drains, Sewers, etc. Large and Small Special Castings.

Description

Cast Iron Pipe has for more than 250 years been the standard conduit for water and gas distribution underground, for which purpose it is better adapted than any other metal pipe.

Because of its crystalline structure, Cast Iron is proof against the destructive effects of corrosion evidenced by the scaling off of the laminated particles of the more highly refined and manipulated metals.

The life of Cast Iron Pipe has never been determined, and it is generally agreed that under normal conditions of soil and climate it will last forever.

Specifications

Following is given the complete text of the specifications of the American Water Works Association, which have been adopted by the above Makers as their manufacturing standard for water pipe.

STANDARD SPECIFICATIONS FOR CAST-IRON WATER PIPE AND SPECIAL CASTINGS, ADOPTED MAY 12, 1908.

Description of Pipe

Section 1—The pipe shall be made with hub and spigot joints and shall accurately conform to the dimensions given in Tables Nos. 1 and 2. They shall be straight and shall be true circles in section, with their inner and outer surfaces concentric, and shall be of the specified dimensions in outside diameter. They shall be at least 12 feet in length, exclusive of socket.

Pipe with thickness and weight intermediate between the classes in Table No. 2 shall be made of the same outside diameter as the next heavier class. Pipe with thickness and weight less than shown by Table No. 2 shall be made of the same outside diameter as the Class A pipe; and pipe with thickness and weight more than shown by Table No. 2 shall be made of the same outside diameter as the Class D pipe.

All pipe having the same outside diameter shall have the same inside diameter at both ends. The inside diameter of the lighter pipe of each standard outside diameter shall be gradually increased for a distance of about 6 inches from each end of the pipe so as to obtain the required standard thickness and weight for each size and class of pipe.

For pipe of each size from 4-inch to 24-inch inclusive, there shall be two standards of outside diameter, and for pipe from 30-inch to 60-inch inclusive, there shall be four standards of outside diameter, as shown by Table No. 1.

For pipe 4-inch to 12-inch inclusive, one class of special castings shall be furnished, made from Class D pattern. Those having spigot ends shall have outside diameters of spigot ends midway between the two standards of outside diameter as shown by Table No. 1, and shall be tapered back for a distance of 6 inches.

For pipe from 14-inch to 24-inch inclusive, two classes of special castings shall be furnished; Class B special castings with Classes A and B pipe, and Class D special castings with Classes C and D pipe; the former shall have cast on them the letters "AB" and the latter "CD." For pipe 30-inch to 60-inch inclusive, four classes of special castings shall be furnished, one for each class of pipe, and shall have cast on them the letter of the class to which they belong.

Allowable Variation in Diameter of Pipe and Sockets

Section 2—Especial care shall be taken to have the sockets of the required size. The sockets and spigots will be tested by circular guages, and no pipe will be received which is defective in joint-room from any cause. The diameters of the sockets and the outside diameters of the spigot ends of the pipe shall not vary from the standard dimensions by more than .06 of an inch for pipe 16 inches or less in diameter; .08 of an inch for 18-inch, 20-inch and 24-inch pipe; .10 of an inch for 30-inch, 36-inch and 42-inch pipe; .12 of an inch for 48-inch, and .15 of an inch for 54-inch and 60-inch pipe.

Allowable Variation in Thickness

Section 3—For pipe whose standard thickness is less than 1 inch, the thickness of metal in the body of the pipe shall not be more than .08 of an inch less than the standard thickness, and for pipe whose standard thickness is 1 inch or more, the variation shall not exceed .10 of an inch, except that for spaces not exceeding 8 inches in length in any direction, variations from the standard thickness of .02 of an inch in excess of the allowance above given shall be permitted. For special castings of standard patterns a variation of 50 per cent. greater than allowed for straight pipe shall be permitted.

Defective Spigots May Be Cut

Section 4—Defective spigot ends on pipe 12 inches or more in diameter may be cut off in a lathe and a half round wrought-iron band shrunk into a groove cut in the end of the pipe. Not more than 12 per cent of the total number of accepted pipe of each size shall be cut and banded, and no pipe shall be banded which is less than 11 feet in length, exclusive of the socket.

In case the length of a pipe differs from 12 feet, the standard weight of the pipe given in Table No. 2 shall be modified in accordance therewith.

Special Castings

Section 5—All special castings shall be made in accordance with the cuts and the dimensions given in the tables forming a part of these specifications.

The diameters of the sockets and the external diameters of the spigot ends of the special castings shall not vary from the standard dimensions by more than .12 of an inch for castings 16 inches or less in diameter; .15 of an inch for 18-inch, 20-inch and 24-inch; .20 of an inch for 30-inch, 36-inch and 42-inch and .24 of an inch for 48-inch, 54-inch and 60-inch. These variations apply only to special castings made from standard patterns.

The flanges on all manhole castings and manhole covers shall be faced true and smooth, and drilled to receive bolts of the sizes given in the tables. The manufacturer shall furnish and deliver all bolts for bolting on the manhole covers, the bolts to be of the sizes shown on plans and made of the best quality of mild steel, with hexagonal heads and nuts and sound, well-fitting threads.

Marking

Section 6—Every pipe and special casting shall have distinctly cast upon it the initials of the maker's name. When cast especially to order, each pipe larger than 4-inch may also have cast upon it figures showing the year in which it was cast, and a number signifying the order in



point of time in which it was cast, the figures denoting the year being above and the number below, thus:

1908	1908	1908
1	2	3

etc., also any initials, not exceeding four, which may be required by the purchaser. The letters and figures shall be cast on the outside and shall be not less than 2 inches in length and ⅛ of an inch in relief for pipe 8 inches in diameter and larger. For smaller sizes of pipe the letters may be 1 inch in length. The weights and the class letter shall be conspicuously painted in white in the inside of each pipe and special casting after the coating has become hard.

Allowable Percentage of Variation in Weight

Section 7—No pipe shall be accepted the weight of which shall be less than the standard weight by more than 5 per cent for pipe 16 inches or less in diameter, and 4 per cent for pipe more than 16 inches in diameter, and no excess above the standard weight of more than the given percentage for the several sizes shall be paid for. The total weight to be paid for shall not exceed for each size and class of pipe received the sum of the standard weights of the same number of pieces of the given size and class by more than 2 per cent.

No special casting shall be accepted the weight of which shall be less than the standard weight by more than 10 per cent. for pipe 12 inches or less in diameter, and 8 per cent. for larger sizes, except that curves, Y-pieces and breeches pipe may be 12 per cent. below the standard weight, and no excess above the standard weight of more than the above percentages for the several sizes will be paid for. These variations apply only to castings made from the standard patterns.

Quality of Iron

Section 8—All pipe and special castings shall be made of cast iron of good quality, and of such character as shall make the metal of the castings strong, tough and of even grain, and soft enough to satisfactorily admit of drilling and cutting. The metal shall be made without any admixture of cinder iron or other inferior metal, and shall be remelted in a cupalo or air furnace.

The contractor shall have the right to make and break three bars from each heat or run of metal, and the test shall be based upon the average results of the three bars. Should the dimensions of the three bars differ from those given below, a proper allowance therefor shall be made in the results of the tests.

Tests of Material

Section 9—Specimen bars of the metal used, each being twenty-six inches long by two inches wide and one inch thick, shall be made without charge as often as the engineer may direct, and in default of definite instructions, the contractor shall make the test at least one bar from each heat or run of metal. The bars when placed flatwise upon supports twenty-four inches apart, and loaded in the center, shall support a load of 2,000 pounds, and show a deflection of not less than .30 of an inch before breaking; or if preferred, tensile bars shall be made which will show a breaking point of not less than 20,000 pounds per square inch.

Casting of Pipe

Section 10—The straight pipe shall be cast in dry sand molds in a vertical position. Pipe 16 inches or less in diameter shall be cast with the hub end up or down, as specified in the proposals. Pipe 18 inches or more in diameter shall be cast with the hub end down.

The pipe shall not be stripped or taken from the pit while showing color of heat, but shall be left in the flasks for a sufficient length of time to prevent unequal contraction by subsequent exposure.

Quality of Castings

Section 11—The pipe and special castings shall be smooth, free from scales, lumps, blisters, sand holes and defects of every nature which unfit them for the use for which they are intended. No plugging or filling will be allowed.

Cleaning and Inspection

Section 12—All pipe and special castings shall be thoroughly cleaned and subjected to a careful hammer inspection. No casting shall be coated unless entirely clean and free from rust, and approved in these respects by the engineer immediately before being dipped.

Coating

Section 13—Every pipe and special casting shall be coated inside and out with coal-tar pitch varnish. The varnish shall be made from coal tar. To this material sufficient oil shall be added to make a smooth coating, tough and tenacious when cold, and not brittle nor with any tendency to scale off.

Each casting shall be heated to a temperature of 300 degrees Fahrenheit immediately before it is dipped, and shall possess not less than this temperature at the time it is put in the vat. The ovens in which the pipe is heated shall be so arranged that all portions of the pipe shall be heated to an even temperature. Each casting shall remain in the bath at least five minutes.

The varnish shall be heated to a temperature of 300 degrees Fahrenheit(or less if the engineer shall so order), and shall be maintained at this temperature during the time the casting is immersed.

Fresh pitch and oil shall be added when necessary to keep the mixture at the proper consistency, and the vat shall be emptied of its contents and refilled with fresh pitch when deemed necessary by the engineer. After being coated the pipe shall be carefully drained of the surplus varnish. Any pipe or special casting that is to be recoated shall first be thoroughly scraped and cleaned.

Hydrostatic Test

Section 14—When the coating has become hard, the straight pipe shall be subjected to a proof by hydrostatic pressure, and, if required by the engineer, they shall also be subjected to a hammer test under this pressure.

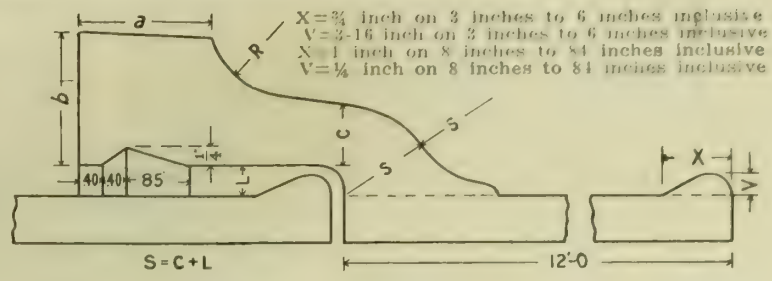
The pressure to which the different sizes and classes of pipe shall be subjected are as follows:

	20-Inch Diameter and Larger, Pounds per Square Inch.	Less than 20-Inch Diameter, Pounds per Square Inch.
Class A Pipe.	150	300
Class B Pipe.	200	300
Class C Pipe.	250	300
Class D Pipe.	300	300



Weighing

Section 15—The pipe and special castings shall be weighed for payment under the supervision of the engineer after the application of the coal-tar pitch varnish. If desired by the engineer, the pipe and special castings shall be weighed after their delivery, and the weights so ascertained shall be used in the final settlement, provided such weighing is done by a legalized weighmaster. Bids shall be submitted and a final settlement made upon the basis of a ton of 2,000 pounds.



Contractor to Furnish Men and Material

Section 16—The contractor shall provide all tools, testing machines, materials and men necessary for the required testing, inspection and weighing at the foundry of the pipe and special castings; and should the purchaser have no inspector at the works, the contractor shall, if required by the engineer, furnish a sworn statement that all of the tests have been made as specified, this statement to contain the results of the tests upon the test bars.

Power of Engineer to Inspect

Section 17—The engineer shall be at liberty at all times to inspect the material at the foundry, and the molding, casting and coating of the pipe and special castings. The forms, sizes, uniformity and conditions of all pipe and other castings herein referred to shall be subject to his inspection and approval, and he may reject, without proving, any pipe or other casting which is not in conformity with the specifications or drawings.

Inspector to Report

Section 18—The inspector at the foundry shall report daily to the foundry office all pipe and special castings rejected, with the causes for rejection.

Castings to Be Delivered Sound and Perfect

Section 19—All the pipe and other castings must be delivered in all respects sound and conformable to these specifications. The inspection shall not relieve the contractor of any of his obligations in this respect, and any defective pipe or other castings which may have passed the engineer at the works or elsewhere shall be at all times liable to rejection when discovered, until the final completion and adjustment of the contract; provided, however, that the contractor shall not be held liable for pipe or special castings found to be cracked after they have been accepted at the agreed point of delivery. Care shall be taken in handling the pipe not to injure the coating, and no pipe or other material of any kind shall be placed in the pipe during transportation or at any time after they have received the coating.

Definition of the Word "Engineer"

Section 20—Wherever the word "engineer" is used herein it shall be understood to refer to the engineer or inspector acting for the purchaser and to his properly authorized agents, limited by the particular duties intrusted to them.

Nominal Diam., Inches	Classes	Actual Outside Diam., Inches	Diam. of Sockets		Depth of Sockets		A	B	C
			Pipe, Inches	Special Castings, Inches	Pipe, Inches	Special Castings, Inches			
4	A	4 80	5.60	5 70	3 50	4 00	1 5	1 30	65
4	B-C-D	5 00	5 80	5 70	3 50	4 00	1 5	1 30	65
6	A	6 90	7 70	7 80	3 50	4 00	1 5	1 40	70
6	B-C-D	7 10	7.90	7.80	3 50	4 00	1 5	1 40	70
8	A-B	9 05	9 85	10 00	4 00	4 00	1.5	1 50	75
8	C-D	9 30	10.10	10 00	4 00	4 00	1 5	1 50	75
10	A-B	11 10	11.90	12 10	4 00	4 00	1 5	1 50	75
10	C-D	11 40	12 20	12 10	4 00	4 00	1 5	1 60	80
12	A-B	13 20	14 00	14 20	4 00	4 00	1 5	1 60	80
12	C-D	13 50	14 30	14 20	4 00	4 00	1 5	1 70	85
14	A-B	15 30	16 10	16 10	4 00	4 00	1 5	1 70	85
14	C-D	15 65	16.45	16.45	4 00	4.00	1 5	1 80	90
16	A-B	17.40	18 40	18.40	4.00	4 00	1 75	1 80	90
16	C-D	17 80	18 80	18 80	4.00	4 00	1 75	1 90	1 00
18	A-B	19 50	20 50	20 50	4.00	4 00	1.75	1 90	.95
18	C-D	19 92	20 92	20 92	4 00	4 00	1.75	2 10	1 05
20	A-B	21.60	22.60	22 60	4 00	4.00	1.75	2 00	1 00
20	C-D	22.06	23 06	23 06	4 00	4 00	1.75	2 30	1 15
24	A-B	25 80	26.80	26 80	4 00	4.00	2.00	2 10	1 05
24	C-D	26.32	27.32	27 32	4.00	4 00	2.00	2.50	1.25
30	A	31.74	32 74	32 74	4 50	4 50	2.00	2 30	1 15
30	B	32 00	33 00	33 00	4.50	4.50	2 00	2 30	1 15
30	C	32 40	33 40	33 40	4 50	4.50	2.00	2 60	1 32
30	D	32.74	33 74	33 74	4.50	4.50	2.00	3.00	1 50
36	A	37.96	38.96	38.96	4.50	4.50	2.00	2.50	1 25
36	B	38.30	39.30	39.30	4.50	4.50	2.00	2 80	1.40
36	C	38.70	39.70	39 70	4.50	4 50	2.00	3 10	1 60
36	D	39.16	40.16	40 16	4.50	4.50	2.00	3 40	1.80
42	A	44.20	45.20	45.20	5.00	5.00	2.00	2.80	1 40
42	B	44.50	45 50	45 50	5.00	5.00	2.00	3 00	1 50
42	C	45.10	46.10	46 10	5.00	5.00	2.00	3.40	1 75
42	D	45.58	46.58	46 58	5.00	5.00	2.00	3.80	1 95
48	A	50.50	51.50	51.50	5.00	5 00	2.00	3.00	1 50
48	B	50.80	51.80	51.80	5.00	5 00	2.00	3 30	1 65
48	C	51.40	52.40	52.40	5.00	5 00	2.00	3.80	1 95
48	D	51.98	52.98	52.98	5.00	5.00	2.00	4.20	2.20
54	A	56.66	57.66	57.66	5.50	5.50	2.25	3.20	1 60
54	B	57.10	58 10	58.10	5.50	5.50	2.25	3.60	1.80
54	C	57.80	58.80	58.80	5.50	5.50	2.25	4.00	2.15
54	D	58.40	59.40	59.40	5.50	5.50	2.25	4.40	2.45
60	A	62.80	63.80	63.80	5.50	5 50	2.25	3.40	1.70
60	B	63.40	64.40	64.40	5.50	5.50	2.25	3.70	1 90
60	C	64.20	65 20	65 20	5.50	5.50	2.25	4.20	2 25
60	D	64 82	65.82	65.82	5.50	5.50	2.25	4.70	2.60
72	A	75.34	76.34	76 34	5.50	5.50	2.25	3.80	1 87
72	B	76.00	77.00	77 00	5.50	5 50	2.25	4.20	2 20
72	C	76.88	77.88	77.88	5.50	5.50	2.25	4.60	2 64
84	A	87.54	88.54	88.54	5.50	5.50	2.50	4.10	2 10
84	B	88.54	89.54	89.54	5.50	5.50	2.50	4.50	2.60

STANDARD THICKNESS AND WEIGHTS OF CAST-IRON PIPE

TABLE No. 2 CLASSES A, B, C, D

Nominal Inside Diameter, Inches	Class A 100-Feet Head 43 Pounds Pressure			Class B 200-Feet Head 86 Pounds Pressure			Class C 300-Feet Head 130 Pounds Pressure			Class D 400-Feet Head 173 Pounds Pressure			Nominal Inside Diameter, Inches
	Thickness, Inches	Weight per		Thickness, Inches	Weight per		Thickness, Inches	Weight per		Thickness, Inches	Weight per		
		Foot	Length		Foot	Length		Foot	Length		Foot	Length	
4	.42	20 0	240	.45	21 7	260	.48	23.3	280	.52	25.0	300	4
6	.44	30 8	370	.48	33 3	400	51	35 8	430	.55	38.3	460	6
8	.46	42.9	515	.51	47 5	570	.56	52.1	625	.60	55.8	670	8
10	.50	57.1	685	.57	63 8	765	.62	70.8	850	.68	76.7	920	10
12	.54	72.5	870	.62	82.1	985	.68	91.7	1100	.75	100.0	1200	12
14	.57	89.6	1075	.66	102.5	1230	.74	116.7	1400	.82	129.2	1550	14
16	.60	108.3	1300	.70	125.0	1500	.80	143.8	1725	.89	158.3	1900	16
18	.64	129.2	1550	.75	150 0	1800	.87	175.0	2100	.96	191.7	2300	18
20	.67	150.0	1800	.80	175.0	2100	92	208.3	2500	1.03	229.2	2750	20
24	.76	204.2	2450	.89	233 3	2800	1.04	279.2	3350	1.16	306.7	3680	24
30	.88	291.7	3500	1 03	333.3	4000	1.20	400.0	4800	1.37	450.0	5400	30
36	.99	391.7	4700	1 15	454.2	5450	1.36	545.8	6550	1.58	625.0	7500	36
42	1.10	512.5	6150	1.28	591.7	7100	1.54	716.7	8600	1 78	825.0	9900	42
48	1.26	666.7	8000	1 42	750.0	9000	1.71	908.3	10900	1.96	1050.0	12600	48
54	1 35	800.0	9600	1.55	933.3	11200	1.90	1141.7	13700	2.23	1341.7	16100	54
60	1.39	916.7	11000	1.67	1104 2	13250	2.00	1341.7	16100	2.38	1583.3	19000	60
72	1.62	1283.4	15400	1.95	1545 8	18550	2 39	1904.2	22850	....	.....	....	72
84	1 72	1633.4	19600	2 22	2104 2	25250	...	.....	...	....	.....	....	84

The above weights are per length to lay 12 feet, including standard sockets; proportionate allowance to be made for any variation.

THE MICHIGAN PIPE COMPANY

BAY CITY, MICHIGAN

Products

"Michigan" Wood Mine and Acid Pipe.

"Michigan" Hard Maple, Beech and Birch Pipe (for flushing clum).

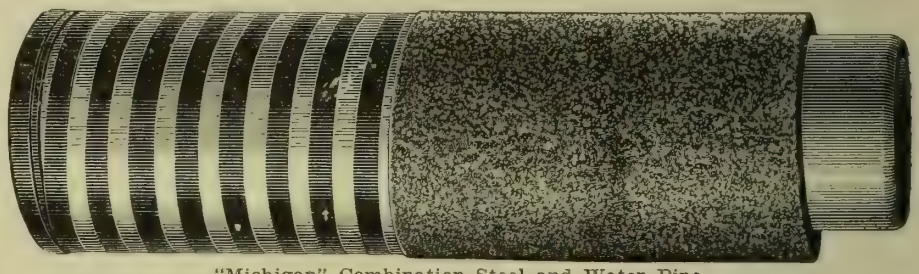
"Michigan" Tin-Lined Wood Casings for insulating underground or overhead heating pipes.

"Michigan Wood Mine and Acid Pipe
is manufactured from selected Michigan White Pine and Tamarack Timber, thoroughly inspected and seasoned, spirally bound under heavy tension with galvanized steel wire or hoop iron, coated with imperishable asphaltum cement. This pipe is extensively used by coal mining operations and collieries throughout the United States, and will resist the action of sulphurous or acidulous liquids in the soil or conveyed through the pipe line.

"Michigan" Wood Mine Pipe is naturally acid-proof, it is light, strong, burst-proof, and inexpensive in first cost. "Michigan" Wood Pipe is the logical wood pipe for mine use, and for use wherever economy is an important factor of consideration, and where life-long satisfactory service is desired.

The advantages over metal pipes are many: It is the natural victim of acides, it is high in first cost, liable to burst, and has other objectionable features. Before you give this matter of piping serious thought, it is for your interest to investigate "Michigan" Pipe.

"Michigan" Hard Maple, Beech and Birch Pipe
(For flushing culm), is manufactured in a similar manner to our water pipe from especially selected, seasoned hard maple, beech and birch timber, constructed with an extra thick shell and tenon. Used in the anthracite coal districts for conveying culm or fine coal dust and slate from the washeries.



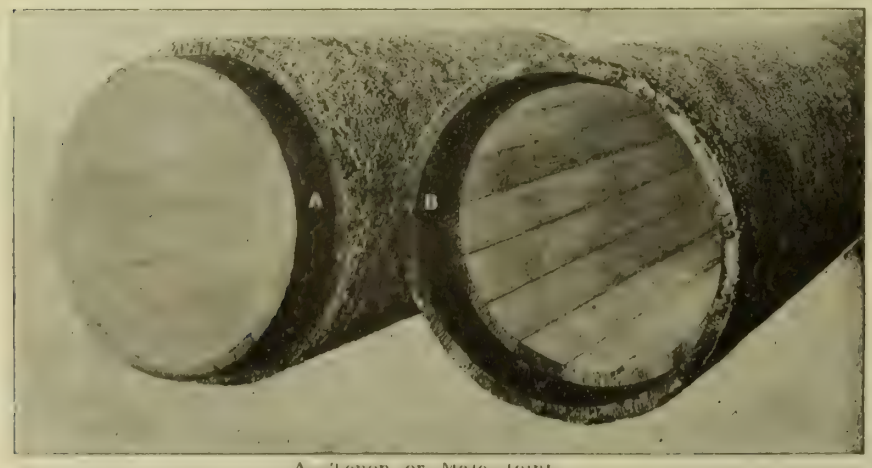
"Michigan" Combination Steel and Water Pipe.

"Michigan" Hard Maple and Beech Pipe is unaffected by sulphur water and simply wears smooth by the friction of the flowing culm, where iron pipe in a short time is eaten and scratched through, rendering it useless. The life of this pipe is estimated ten times the life of metal pipe.

"Michigan" Tin-Lined Wood Casings
for installing underground or overhead steam, or other heating pipes. Casing made of well seasoned pine and tamarack wood shell 4—3 and 2 inches in thickness; of the solid log in the smaller sizes, and in the built up form (stave with tongue and groove) in the larger sizes, in lengths of 6 to 8 ft., strengthened with a No. 6 double galvanized steel wire. The interior of casing has a covering of bright tin, and the outer surface is covered with heavy waterproof asphaltum and rolled when hot in sawdust. An average dead air space of 2 to 3½" allowed between the wrought-iron pipe and the covering. The mortise and tenon joints fit snuggly together and forms a running fit.



Fig. 2 "Michigan" Tin-Lined Wood Casings for Insulating Underground or Overhead Steam Pipes.



A—Tenon or Male Joint.
B—Mortise or Female Joint.



MINE LOCOMOTIVE SECTION

Engineering Data

Specification Data.
Table—Gross Tons Hauled by Electric Locomotives, average track conditions.
Sizes of Rail for various weights of Locomotives
Relation of Wheel Base to Radius of Minimum Curve.

The following manufacturers have catalogue descriptions in this section:

Baldwin Locomotive Works.
Electric Storage Battery Co.
General Electric Co.
Goodman Mfg. Co.
Gould Storage Battery Co.
Hess-Bright Mfg. Co.
Jeffrey Mfg. Co.
Milwaukee Locomotive Mfg. Co.
Morgan-Gardner Electric Co.
Nuttall, R. D., Co.
Pennsylvania Casting & Mch. Works.
Porter, H. K., Co.
S. K. F. Ball Bearing Co.
Tool Steel Gear & Pinion Co.
Van Dorn & Dutton Co.
Westinghouse Electric & Mfg. Co.
Whitcomb, Geo. D., Co.

For additional descriptions of Mine Locomotives and Equipment, not appearing in this section, refer to Index of Products in front of book.

Specification Data for Haulage Locomotives

Type Required

- Electric
- Compressed Air
- Gasoline
- Steam
- Storage Battery

Size or Weight Locomotive Required.

Number Required

Dimensions

- Maximum width locomotive can have
- Maximum height locomotive can have
- Is it necessary to take apart to install (in case of shaft mine?)

Track

- Weight of Rail ..... lbs. per yard.
- Exact gauge of track on straight haul
- Exact gauge of track on curves
- Radius of shortest curve in feet from center of track
- Length of shortest curve
- Average length of haul

†Grades

- Maximum grade in favor of load is...% for...ft.
- Maximum grade against load is ....% for ....ft.
- What is the average grade and is it in favor or against the load
- Length of maximum grade (in favor of load ....
- Length of maximum grade (against load ....
- If curves occur on grade, what is radius and grade

Haulage Conditions

- Width of entry
- Height of entry over rail and at lowest point in rooms
- Clearance each side of track
- Number Cars to be hauled per day
- Number Cars per trip
- Number of places to haul from

*Cars

- Length of Pit Car
- Width of Pit Car
- Weight of Pit Car empty
- Weight of Pit Car and load
- Diameter of Pit Car Wheel
- Length of Wheel Base
- Do Pit Cars have single or double bumpers
- Height from top of rail to top of bumper
- Height from top of rail to bottom of bumper
- Width from outside to outside of bumpers
- Height from top of rail to center of hitching
- Dimensions of coupling—length and width, inside and outside

Trolley Wire (Use this for electric locomotives).

- Location—Right or left side going toward face
- Distance of trolley wire outside of track rail
- Highest point in trolley wire above rail
- Lowest point in trolley wire above rail
- Location of motorman
- Voltage
- For gathering locomotive, give longest haul locomotive must make using cable

Gasoline Locomotives

- Is haul inside or outside
- Kind of liquid fuel available
- Altitude above sea level
- State ventilating conditions

Compressed Air Locomotives

- Elevation above sea level of compressor location
- Will compressor be operated by steam or water power
- If steam, state pressure
- If slope mine give length and pitch
- If shaft mine give depth
- Give distance from convenient location for compressor to head of shaft or slope
- If drift mine, state distance from convenient location for compressor to parting outside where locomotive will deliver loaded cars.

Storage Battery Locomotives

- What source of power, giving voltage, etc., will be used to charge locomotive batteries?
- Number of entries to be served for gathering locomotive
- Number working rooms to be served on each entry
- Give a schedule of the service required of the locomotive, stating when at work and when idle throughout the twenty-four hours?
- Will it be possible to give the battery a boosting charge at any time during the day?

*Note:—

If possible, it is expedient to furnish drawings of cars showing draught rigging so that locomotive may be arranged to suit.

†Note:—

A sketch or better, a map of your tracks with notations thereon in regard to grades and elevations at various points and referring to the weights of, or number of carloads of material which must be hauled between the various points per hour or in 5, 8 or 10 hours, and with a convenient location for the compressor indicated, usually gives a much clearer idea of your requirements than it is possible to give by tabulated method. A profile of important roads, or those where excessive or irregular grades occur may also suggest important alterations in the equipment. If haulage roads are to be lengthened, indicate which ones, and at what rate in feet per year they may be expected to increase in length. If the quantities to be hauled will increase, state how soon and how much. Also what lengths of haul and what quantities you wish to provide for in making the initial installation.

Gross Tons Hauled by Electric Locomotives

Average Track Conditions.

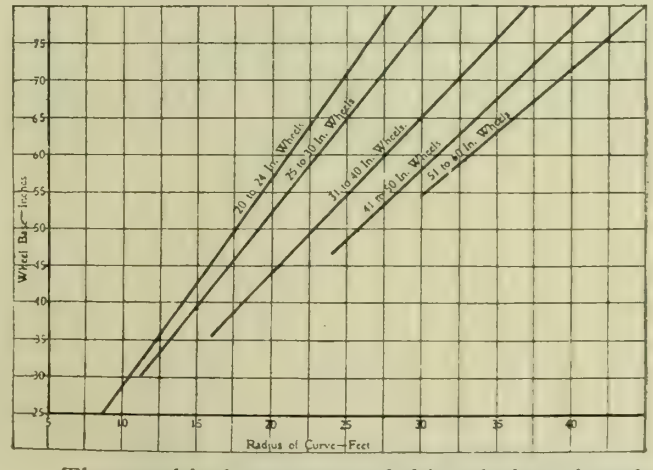
Weight of Locomotive in Lbs.	Percentage Adhesion Between Wheels and Rails	Rated Draw-bar Pull in Lbs.	Speed in Miles Per Hour	Gross Train Load in Tons That Can Be Hauled on Level Track and Different Grades With Train Resistances of 20, 25 and 30 Pounds Per Ton																							
				Level			One Per Cent Grade			Two Per Cent Grade			Three Per Cent Grade			Four Per Cent Grade			Five Per Cent Grade			Six Per Cent Grade			Seven Per Cent Grade		
				20	25	30	20	25	30	20	25	30	20	25	30	20	25	30	20	25	30	20	25	30	20	25	30
7000	20	1400	5 7	70	56	47	33	30	27	21	19	18	15	14	13	11	11	10	9	8	8	7	7	6	6	5	5
	25	1750	5.1	87	70	58	42	37	34	27	25	23	19	18	17	15	14	13	12	11	11	9	9	9	8	8	7
8000	20	1600	6 6	80	64	53	38	34	30	24	22	20	17	16	15	13	12	11	10	10	9	8	8	7	6	6	6
	25	2000	6.1	100	80	67	48	43	38	31	28	26	22	21	20	17	16	15	13	13	12	11	10	10	9	9	8
10000	20	2000	6 5	100	80	67	47	42	38	30	28	26	21	20	19	16	15	15	12	12	12	10	10	9	8	8	8
	25	2500	6.1	125	100	83	60	53	48	38	35	33	27	26	24	21	20	19	17	16	15	14	13	13	11	11	11
12000	20	2400	6 8	120	96	80	57	50	46	36	33	31	25	24	23	19	18	17	15	14	14	12	12	11	10	9	9
	25	3000	6.3	150	120	100	72	64	58	46	42	39	33	31	29	25	24	23	20	19	18	16	16	15	13	13	13
14000	20	2800	7 3	140	112	93	66	59	53	42	39	36	30	28	26	22	21	20	17	16	16	14	13	13	11	11	10
	25	3500	6 7	175	140	117	84	47	67	54	50	46	38	36	34	29	28	27	23	22	21	18	17	17	15	15	14
15000	20	3000	6 6	150	120	100	71	63	57	45	42	39	32	30	28	24	23	22	19	18	17	15	14	14	12	12	11
	25	3750	6.1	187	150	125	90	80	72	57	53	49	41	39	37	31	30	29	25	24	23	20	20	19	17	16	16
16000	20	3200	7 1	160	128	107	76	67	61	48	44	41	34	32	30	26	24	23	20	19	18	16	15	15	13	13	12
	25	4000	6 7	200	160	133	96	85	77	61	57	53	44	41	39	34	32	30	27	26	25	22	21	20	18	17	17
20000	20	4000	7 6	200	160	133	95	85	76	60	55	51	42	40	33	32	30	29	25	24	23	20	19	19	16	16	15
	25	5000	7.0	250	200	167	120	107	96	77	71	66	55	52	49	42	40	38	33	32	31	27	26	25	22	22	21
24000	20	4800	6 6	240	192	160	114	101	91	72	66	62	51	48	45	38	36	35	30	29	23	24	23	22	19	19	18
	25	6000	6.2	300	240	200	144	128	115	92	85	79	66	62	59	50	48	46	40	38	37	33	31	30	27	26	25
26000	20	5200	6 9	260	208	173	123	110	99	78	72	67	55	52	49	42	40	38	32	31	30	26	25	24	21	20	20
	25	6500	6.4	325	260	217	156	139	125	100	92	85	71	67	64	54	52	50	43	42	40	35	34	33	29	28	27
30000	20	6000	7 1	300	240	200	142	127	114	90	83	77	64	60	57	48	46	44	37	36	35	30	29	28	24	24	23
	25	7500	6.6	375	300	250	180	160	144	115	106	99	82	78	73	63	60	57	50	48	46	41	39	38	34	33	32
36000	20	7200	7 7	360	288	240	171	152	137	108	100	93	76	72	68	57	55	52	45	43	42	36	35	34	29	28	27
	25	9000	7.2	450	360	300	216	192	173	138	127	118	99	93	88	76	72	69	60	58	55	49	47	46	40	39	38
40000	20	8000	7 7	400	320	267	190	169	152	120	111	103	85	80	76	64	61	58	50	48	46	40	39	37	32	31	31
	25	10000	7.2	500	400	333	240	213	192	153	141	131	110	103	98	84	80	76	67	64	61	54	52	51	45	44	42
44000	20	8800	7 8	440	352	293	209	186	167	132	122	113	93	88	83	70	67	64	55	53	51	44	42	41	36	35	34
	25	11000	7.4	550	440	367	264	235	211	169	156	145	121	114	107	92	88	84	73	70	68	60	58	56	49	48	47
50000	20	10000	7 5	500	400	333	237	211	190	150	138	128	106	100	94	80	76	73	62	60	58	50	48	47	41	39	38
	25	12500	7.1	625	500	417	300	267	240	192	177	164	137	130	122	105	100	95	83	80	77	68	65	63	56	54	53

Minimum Sizes of Rails

Minimum sizes of rail recommended for mine locomotives are given in the following table. The values are approximate only, as the proper weight, or size, of rail that should be used is determined by the character of the road bed, the spacing of ties, and general construction. For average conditions in general mine and industrial service, rails of the following minimum sizes are recommended:

Weight of Locomotive in Tons	Weight of Rails in Pounds Per Yard
4 to 6	16
6 to 8	20
8 to 10	25
10 to 13	30
13 to 15	40
15 to 20	50

RELATION OF WHEEL BASE TO RADIUS OF MINIMUM CURVE



The graphical statement of this relation given by the curves is plotted from values obtained from a formula given in the Baldwin Locomotive Works' "Locomotive Data." Experience has shown the values to be safe ones for standard wheel, flange, and truck play. To insure that the curves will give safe results, the same gauge is assumed on curves as on tangent track. If a liberal "spread" is provided in the track at curves, the values of the curves for wheel base may be increased by from 10 to 25 per cent.

Courtesy Westinghouse Electric & M'f'g Co.

GENERAL ELECTRIC COMPANY

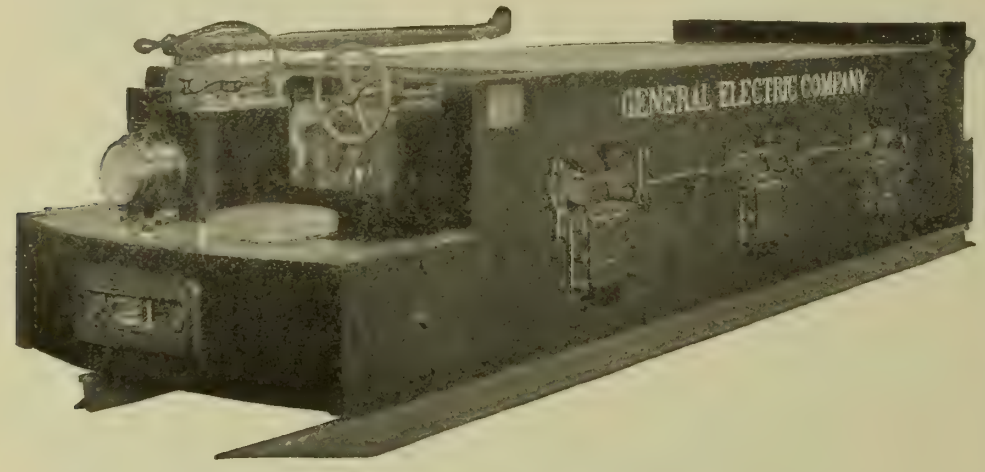
General Offices: Schenectady, N. Y

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Electrical Equipment for Mines

Many types of mining locomotives are manufactured by General Electric Company. For any given set of haulage conditions just the right type of locomotive can be selected. The wide choice possible makes compromises unnecessary. Two representative types of these locomotives are illustrated to show the wide variety available.



The locomotive below weighs six tons, is for 42″ track guage and will develop a maximum draw bar pull of 3500 pounds. When desired it can be built for a minimum track guage of 30″. It will operate from either a 250 trolley or its self-contained storage battery. The change from trolley to storage battery operation is made entirely automatic, by a switch which makes the necessary connections without attention from the operator. This locomotive's storage battery is automatically charged when locomotive is running from trolley wire.

Straight storage battery locomotives without trolley operating feature are furnished when desired. These locomotives are more than meeting the high expectations of users generally,

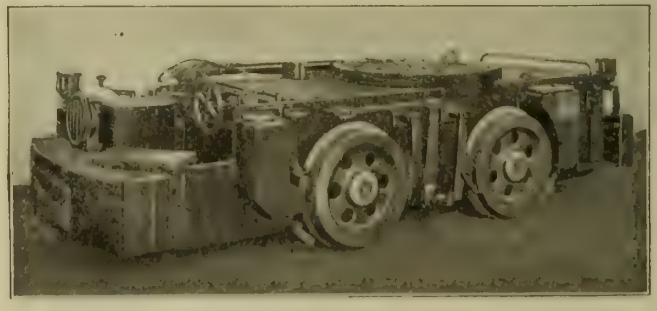
The locomotive at the left was built for underground haulage at Rochester and Pittsburg Mining Company. It is equipped with three 85 H. P. motors, each provided with ball bearings which prevent armature from touching pole pieces, keep oil out of motor, maintain commutator in alignment, cut down bearing friction and reduce quantity of lubricant required. Sparkless commutation is assured by the use of a special motor construction. Although this locomotive has a long wheel base, it is easy on track. It weighs twenty tons and will develop a maximum draw bar pull of twelve thousand pounds. Great strength is assured by massive rolled steel side frames.

This locomotive can be operated between working face and entry without a trolley wire. Simply hook the cable to entry trolley; throw in motor switch and operate locomotive forward or backward without fear of over-running or kinking cable.

Constant tension on cable is obtained by a ball-bearing motor geared to a ball-bearing reel. The motor is always connected across the power line, acting as an endless spring. It runs as a motor when reeling in cable, and as a generator when paying out cable. It maintains a firm pull, and will not burn out when locomotive is standing still. The motor is under the reel and completely protected from falling top. Mechanical springs catch and break, chain drives are complicated and expensive to maintain,—friction drives are non-positive and wear rapidly—the "electric spring" has none of these disadvantages.



Combination Storage Battery and 250 Volt Trolley Locomotive.



Gathering Lococmotive.

GOODMAN MANUFACTURING CO.

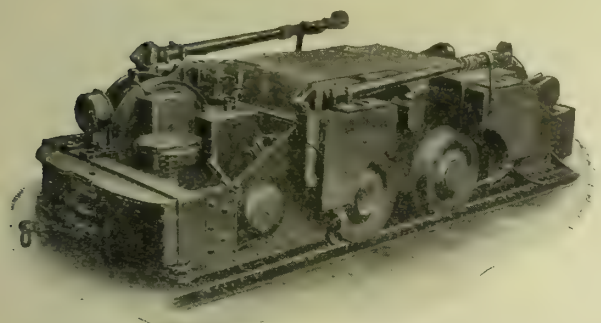
ELECTRIC MINING MACHINERY

General Office and Works: Chicago, Ill., Halsted Street at 48th Place.

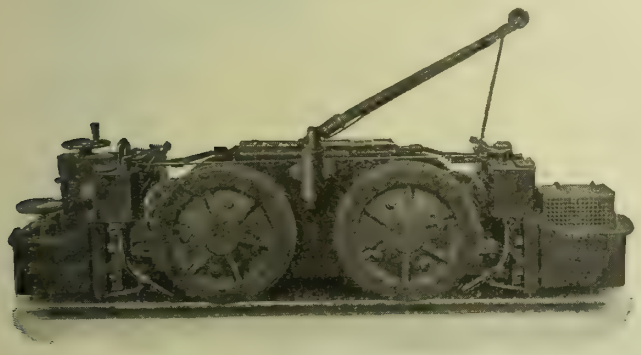
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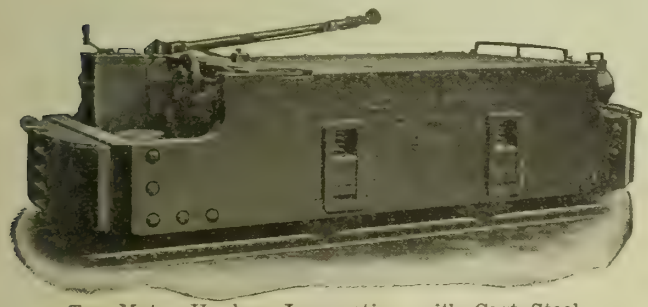
AUSTRALASIA—Wm. Adams & Co., Sydney, N. S. W.



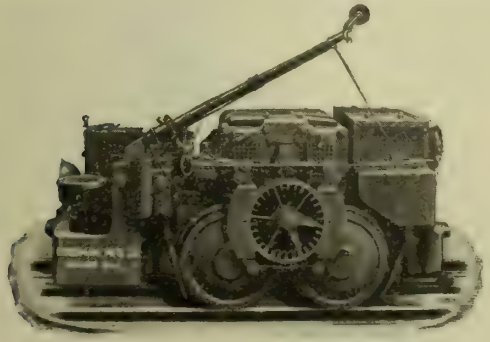
Low Vein "Universal" Gatherer, with Electric Cable Reel and Crab Reel.



Single-Motor Haulage Locomotive. Unit Drive for All Four Wheels.



Two-Motor Haulage Locomotive, with Cast Steel Frame and Outside Wheels.



100 H. P. Rack Rail Locomotive. Runs by Traction on Level Tracks.

The Goodman Line of Electric Locomotives is complete in its provision of equipment for all purposes and to meet all operative conditions.

Light and Quick Locomotives for Gathering.

Heavier Traction Locomotives for Main Haulage.

Rack Rail System for Grades in Hilly Mines.

Gathering Locomotives

In numerous types and sizes for car distribution and gathering under all systems of operation. Plain locomotives for entry gathering and simple switching. Electric cable reel locomotives for working to the face in rooms and entries. Crab reel locomotives for reaching to a distance with a wire rope to place or get a car in dip rooms, etc. Combination electric cable and crab reel locomotives as truly "Universal" gatherers. Bulletin No. 503.

Single-Motor Traction Haulage Locomotives

As maximum load pullers per ton of weight. All the advantages of unit drive, and of simplified construction and larger parts as compared to the greater number of smaller parts in two-motor types. All parts accessible from above—no pit work. Bulletin No. 402.

Two-Motor Traction Haulage Locomotives

In various forms of frame construction, motor arrangement, etc., to suit purchaser's preferences and operative requirements. Steel frames, with spring bumpers and spring draft gearing. Bulletin No. 451.

Rack Rail Locomotives

For positive haulage in hilly mines where grades make traction haulage difficult or uneconomical. Avoids the limitations of adhesion as a tractive basis and gives full value to the motor horsepower. Bulletin No. 301.

Making all types, we recommend and furnish always what is best suited.

THE JEFFREY MANUFACTURING COMPANY

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Electric Haulage Locomotives

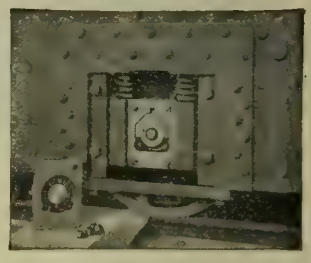


Journal Box with Lid in Place.

The New Jeffrey Locomotive Journal Box eliminates wear on wheel hubs and journal boxes—saving time, expense and labor.

Lateral motion of wheels and axles is prevented by hardened tool steel pins in the ends of the axles, and hardened tool steel plates in the journal box lids.

Send for Locomotive Bulletin No. 117.



Journal Box with Lid Removed.

Jeffrey Locomotive Features meet every coal mining demand.

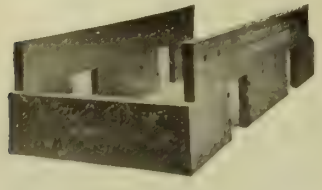
THE JEFFREY ARMOR PLATE TYPE HAULAGE LOCOMOTIVE



Built for Great Strength and Durability—yet Simple in Design and Construction. All parts readily accessible.

Built in sizes from 7 tons up to and including 30 tons in weight.

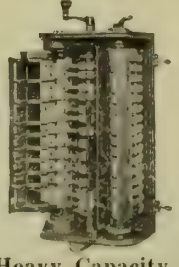
ARMORPLATE TYPE OF FRAME



Rolled Steel Slabs 2½" to 6" thick give a frame construction that is practically indestructible.

The relative small space occupied by the frame permits for a given weight of locomotive, of maximum motor capacity for a given gauge.

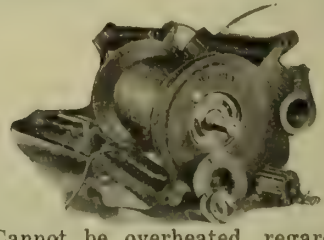
CONTROLLER



Extra Heavy Capacity for Mining Service.

Grid Resistance has heavy cast grids with large supporting rods built up with pure mica and copper washers and heavy malleable end plates. Heavy brass resistance terminals.

HEAVY CAPACITY BALL BEARING MOTORS

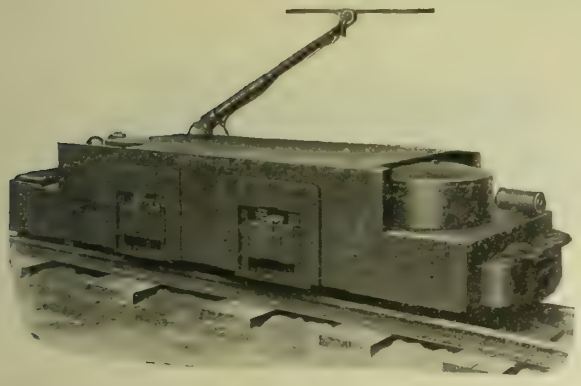


Cannot be overheated, regardless of the weight of trip or the percentage of adverse grades.

The Ball Bearings eliminate bearing wear on the armatures—insure continuous maximum service, with freedom from expensive breakdowns and repairs.

THE JEFFREY MANUFACTURING COMPANY

Electric Gathering Locomotives

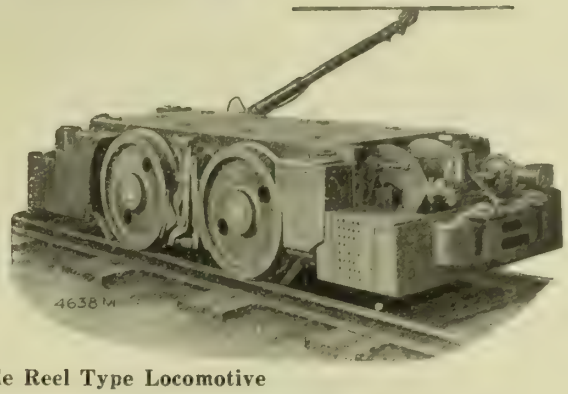


Crab Reel Type Locomotive

Built for track gauges of 24″ and up in sizes of 3, 4, 5 or 6 tons.



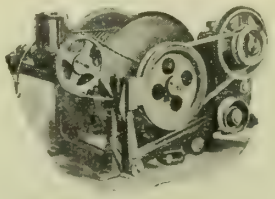
Does not enter the rooms. Cars are drawn out of mine room by means of steel rope operated by crab winding device, as shown.



Cable Reel Type Locomotive

For operating in rooms where it is not practical or economical to use trolley wires.

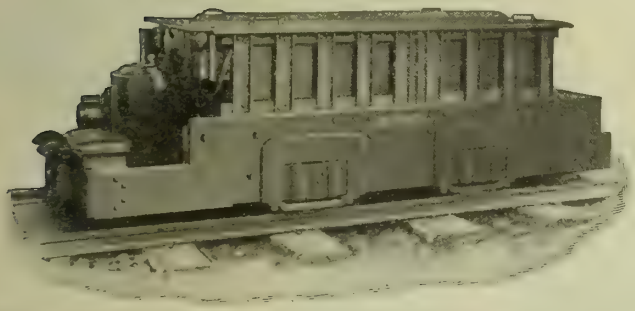
Built for track gauges of 35½″ and up.



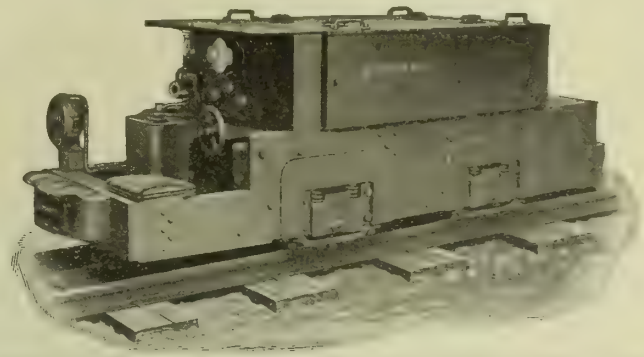
Standard Cable Reel Device can be motor driven, as illustrated, or mechanically driven from an intermediate shaft on one of the locomotive motors.

JEFFREY STORAGE BATTERY GATHERING LOCOMOTIVES.

Give excellent results in mines where the average grade is not excessive and the haul is not extremely long. One of these locomotives will easily replace 3 or 4 mules.



Jeffrey Storage Battery Locomotive with Structural Steel Battery Box.



Storage Battery Mine Locomotive with Wooden Battery Box.

This type of locomotive is built in weights ranging from 3 to 5 tons, for track gauges of 18 inches and up. The Battery Equipment consists of either Edison or Ironclad Exide cells, as desired.

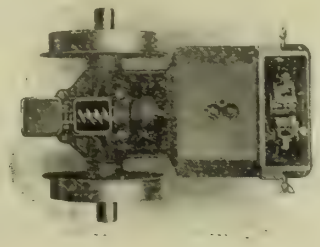
Motors are mounted lengthwise of the locomotive and drive the wheel through a four lead steel worm meshing with a 34-tooth bronze worm wheel. The worm drive is housed in a case around the axle. This case is filled with oil in which the gears run. Integral with the worm housing is a bracket to which the motor is bolted. The motor drives the worm through a jaw clutch, so that by unbolting the motor from the bracket and sliding it back two inches, the motor may be readily lifted from the locomotive.



Battery motor with the cap on worm housing removed, showing the worm drive direct on the axle.



Worm housing and motor bracket with worm removed from the housing and the motor removed from the bracket.



Top view of the battery motor mounted on an axle, showing the large commutator door with accessible brushes and brush holders, and large commutator.

MORGAN-GARDNER ELECTRIC CO.

68 E. Adams St., Chicago, Ills.

MINING LOCOMOTIVES

LOCOMOTIVES

For Main Line Haulage and Gathering

Morgan-Gardner class "C" and "CC" Locomotives are the result of careful study in safety, track behavior, electrical and mechanical construction. Features necessary in an ideal locomotive.

Built in single or two motor types, varying in weight from 5 to 20 tons. Construction low, short and narrow with short wheel base and flexible truck.

Shock absorbtion receives special attention. The main journal frame is spring supported on axles, motor spring supported and cushioned on journal frame. Smooth control with combination spring buffers and drawheads eliminate bumps and jerks. Main frame is supported on motor truck and collisions cannot interfere with alignment of working parts.

Enclosing the motor, gearing, ball and bronze bearings eliminates grit and dirt. All gears and ball bearings run in grease.

Heat troubles are prevented by the use of a medium speed motor with proportionate gear reduction, interpoles give sparkless commutation, pole pieces are laminated, the large roomy motor with liberally designed parts and internal circulation of air assures low temperature rise. So over-motored that wheels may be slipped without injury to motor. Smooth control with gradual speed acceleration prevent sudden and large rushes of current.

All parts of locomotive are accessible from above, armature or whole motor can be easily removed.

The armature is of the drum wound type, coils are thoroughly insulated in the armature core. Self aligning ball bearings of ample proportions insure cool running and long life, protects the armature from striking pole pieces, maintains a uniform air gap and true running commutator.

Gathering locomotives are fitted with Automatic Cable Reel for advance work and self contained motor driven Gathering Crab.

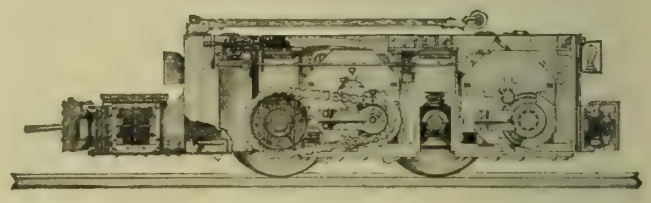
The automatic cable reel is simple in construction and operation and will properly handle 350 feet of electric cable under any working conditions.

The gathering crab is of compact construction, substantial in every detail. Length of cable 300 to 500 feet. Pulling power 1200 pounds at a speed of 300 feet per minute.

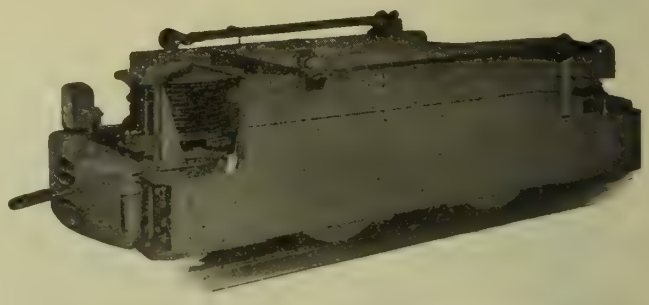
Special features treated in detail in catalogue No. 57 are Magnetic Blowout Controller, Grid Rheostat, Quick Acting Brake and Sanding Device.



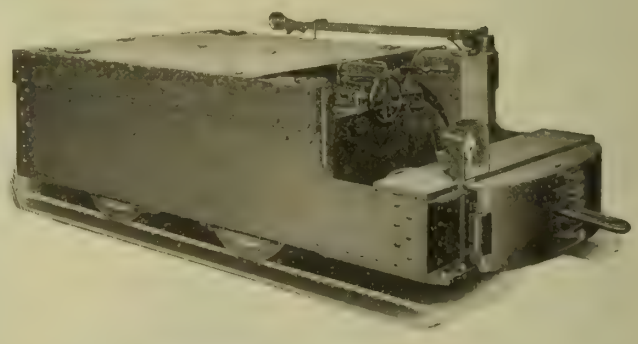
5-Ton Locomotive with Gathering Crab.



Heavy Haulage Motors of Modern Construction.



6-Ton Locomotive with Crab and Automatic Cable Reel.



Two-Motor Haulage Locomotives.

MORGAN-GARDNER
68 E. ADAMS ST "ELECTRIC CO." CHICAGO USA

WESTINGHOUSE ELECTRIC & M'F'G CO.

EAST PITTSBURGH, PA.

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA, PA.

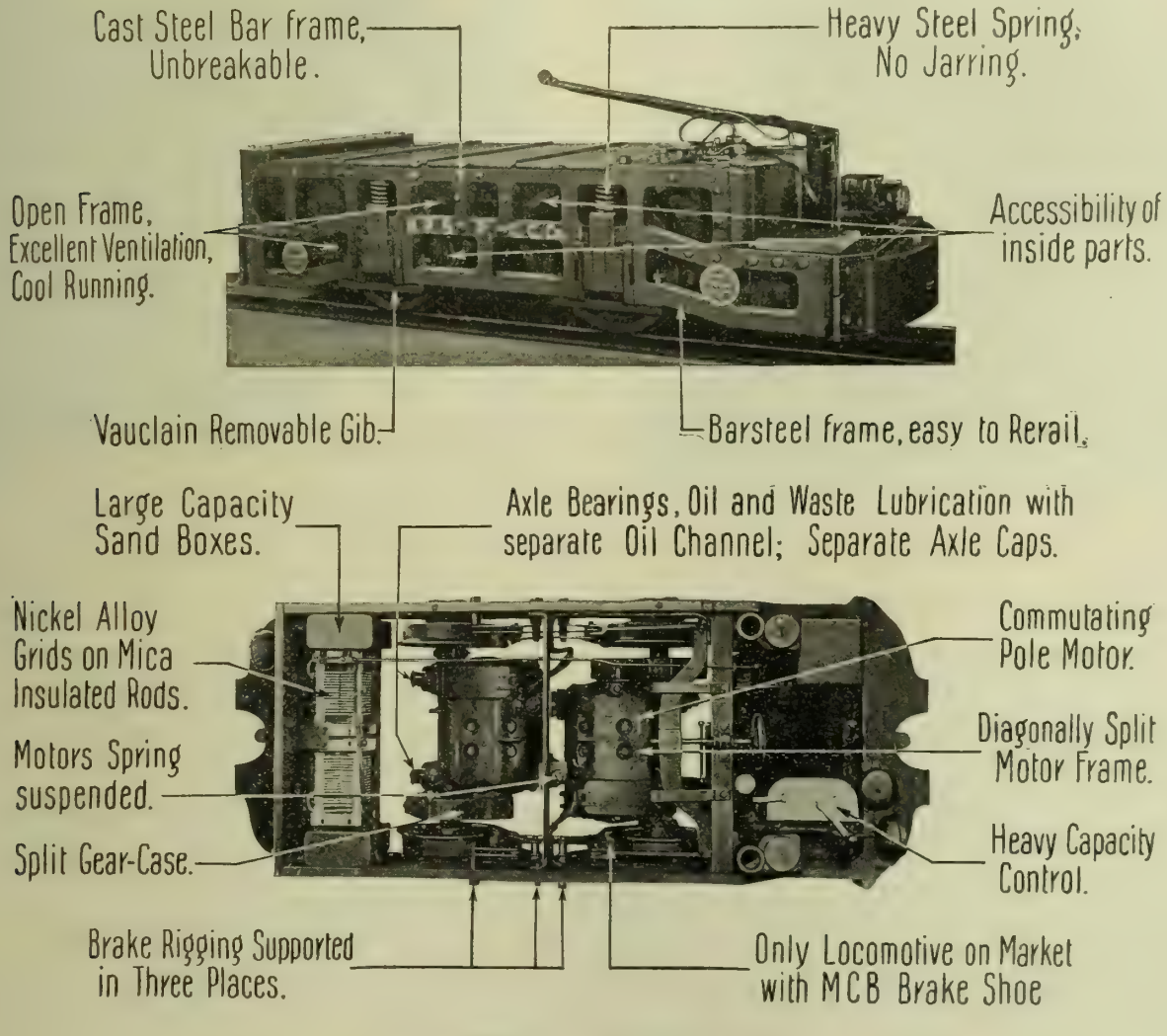
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Barsteel Locomotive Advantages

Reliability Plus Accessibility



BARSTEEL LOCOMOTIVES.

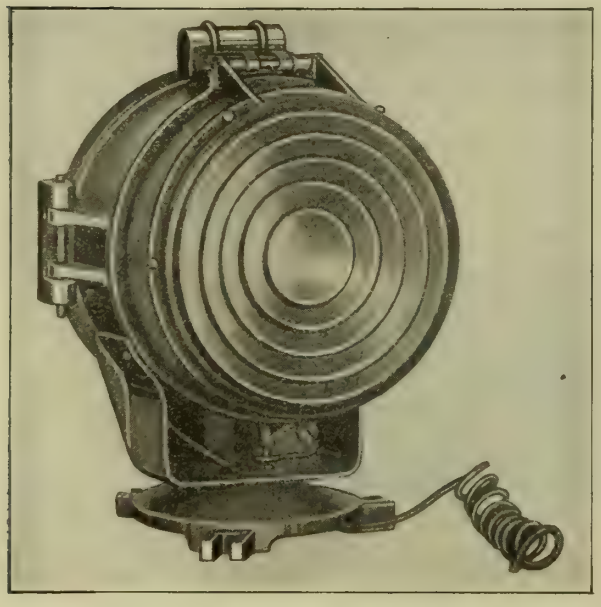
Wt. in Tons.	CAST IRON WHEELS.			STEEL TIRED WHEELS.		
	Diameter.	Draw Bar Pull.	Miles per Hour.	Diameter.	Draw Bar Pull.	Miles per Hour.
4	20	1600	6.3	22	2000	6.1
5	20	2000	5.8	22	2500	5.6
6	24	2400	6.3	26	3000	6.3
7	30	2800	6.8	33	3500	6.7
8	28	3200	7.1	30	4000	7.0
10	30	4000	7.6	33	5000	7.5
12	33	4800	7.6	33	6000	7.1
13	30	5200	9.2	30	6500	8.7
15	36	6000	8.3	36	7500	7.8
18	36	7200	7.9	36	9000	7.5

Ask any user about any feature and have him tell you.

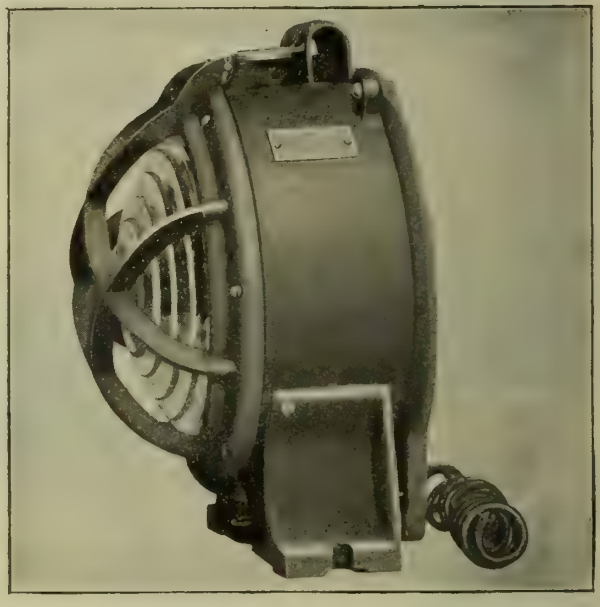
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General Office: Schenectady, N Y. The Guarantee on Goods of Excellence Electrical Sales Offices In All Large Cities

Mine Locomotive Headlights



E-6 Luminous Arc Mine Headlight, Turret Type.



E-5 Luminous Arc Mine Headlight.

Your haulage problems are simplified when the mining locomotive operator is behind a G-E Headlight.

This Headlight throws a long narrow beam of intense light 'way up the track, so that any obstruction can be quickly seen and the train stopped in time, while going at high speed.

The high efficiency electrodes are the same as those used in the well-known G-E Luminous Arc Lamps, of which there are more than 200,000 brilliantly illuminating the streets of cities all over the country.

G-E Mine Headlights are built to withstand rough usage and hard service and are substantial both mechanically and electrically.

Because of the simple, though sturdy construction, G-E Mine Headlights do not readily get out of order and are,therefore, thoroughly reliable under all conditions.

G-E Mine Headlights are made in several types to conform to various conditions of operation found in different haulage systems. Our specialists will co-operate with you in selecting the correct type most adaptable to your particular needs.

5600

GEO. D. WHITCOMB CO.

Main Office and Works
ROCHELLE, ILL.

Sales Offices

Pittsburgh, Pa. Wilkes-Barre, Pa. Ashland, Ky. Birmingham, Ala.
Denver, Colo. Seattle, Wash

Electric Storage Battery Locomotives

The Coal Mining trade has been looking for a self contained haulage locomotive for gathering work.

The Storage Battery Locomotive is well adapted for this work as it can be charged at night when there is a surplus of



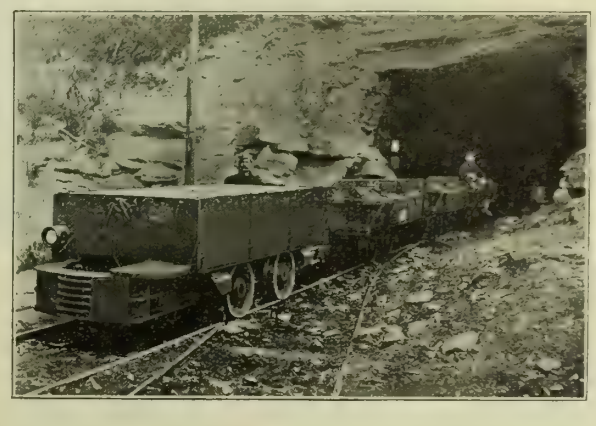
power and is available for use during the day shift without drawing on the power.

A Storage Battery Locomotive does not require trolley line, rail bonds, cables or other equipment to enable it to go to the working faces and gather the cars to the side tracks or switches for the main haulage motors. They are exceptionally useful in the development of a new mine for these reasons: As the power all has to be stored in the batteries they are only adapted for moderately short hauls and a combination of Storage Battery Motors for gathering and Gasoline Locomotives for the main haul makes an ideal combination, as both are independent units free from power plants and transmission lines.

The Whitcomb Electric Storage Battery Locomotives are made in two types—a low type that is 32 inches in height for use in low coals and a higher type that is 42 inches in height for higher coals. The width and length will vary according to battery equipment.

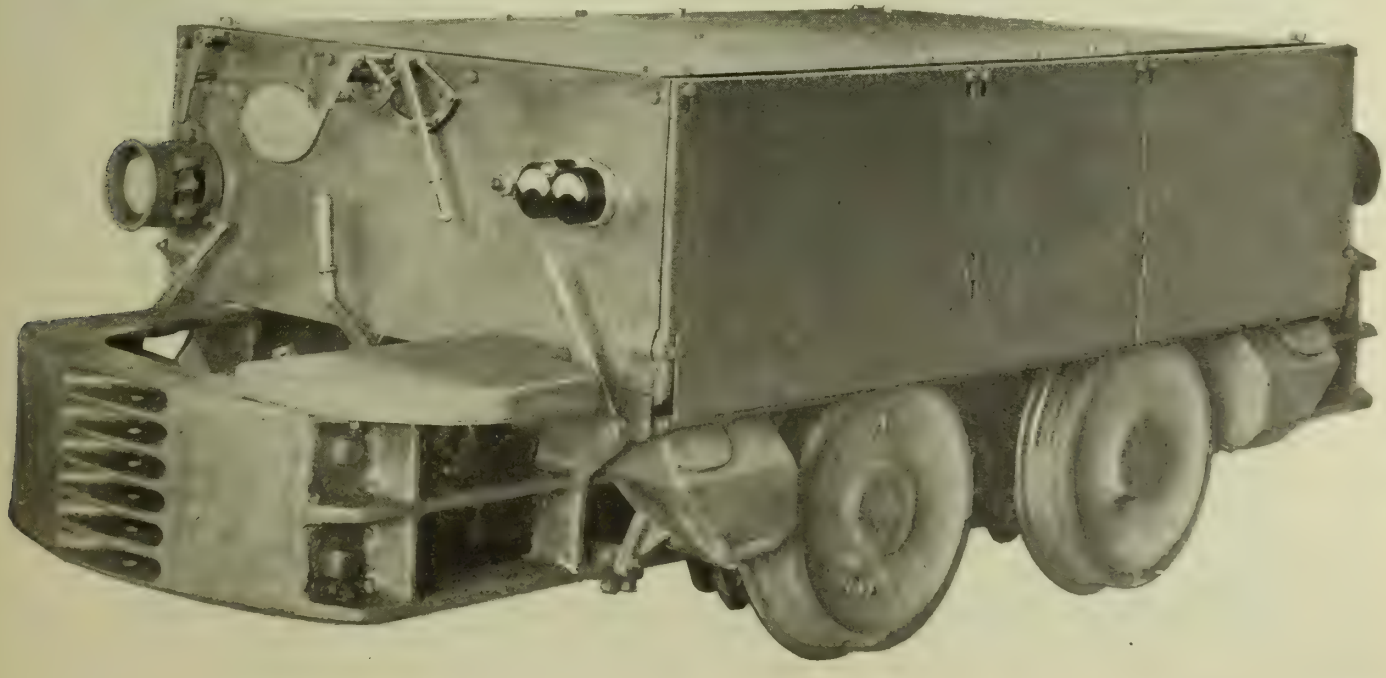
In the installation of Storage Battery Motors it is necessary, to a large extent, to take each installation as a special engineering problem and proportion the battery equipment for the work to be done. Therefore there is no fixed or standard battery equipments.

The Whitcomb Electric Storage Battery Locomotives are



built in weights from two tons to seven tons and with Battery equipment designed to give full eight to ten hour service on one charge of the batteries.

Correspondence is solicited and experienced men will be sent to go over conditions and submit full detailed estimates.



The Electric Storage Battery Company

General Offices and Works:

Philadelphia, Pa

PHILADELPHIA
Allegheny Ave. and 19th St.
NEW YORK
100 Broadway.
CHICAGO
Marquette Building.
ATLANTA
Candler Building.
ROCHESTER
44 Cortland St.
ST. LOUIS
Fullerton Building.
DENVER
1424 Wazee St.
WASHINGTON
1828 L St., N. W.
BOSTON
60 State St.
CLEVELAND
Citizens Bldg.
PITTSBURGH
Keystone Building.
DETROIT
Hayward Building.
SEATTLE
Pierson, Roeding & Co.,
Colman Building.
LOS ANGELES
Pierson, Roeding & Co.,
Pacific Electric Bldg.
SAN FRANCISCO
Pierson, Roeding & Co.,
118-10 New Montgomery St.
CANADA
The Canadian Gen'l Elec. Co.,
Ltd., King & Simcoe Sts.,
Toronto.

The "Ironclad-Exide" Battery for Storage Battery Locomotives



2½-ton Storage Battery Locomotive gathering cars from room in the Sterling Coal Co.'s mines. Ten of these locomotives are in operation at this plant, each gathering twelve loaded cars and delivering twelve empty cars per hour.

During the past few years there has been an increasing use of storage battery locomotives for mine haulage service. This has been due to the fact that the storage battery locomotive furnishes a most efficient and reliable form of locomotion, that it eliminates the danger of shocks to workmen, the necessity of overhead trolley wires and fittings and the bonding of rails which are necessary with electric locomitives securing current from overhead trolley lines.

The battery locomotive has been found particularly adapted for use in gathering work in mines where conditions prohibit the use of a trolley locomotive.

In considering the question of battery locomotives, the storage battery to be used is a very important matter. The efficiency and reliability of the locomotive and its cost of operation are, to a very great degree, dependent upon the battery.

This Company has made an extensive study of mine locomotive requirements and from its experience recommends the "Ironclad-Exide" Battery for this purpose. This battery, due to its durability under adverse as well as favorable conditions and its high capacity, is well adapted to this service, particularly for mine gathering locomotives. This battery is exceptionally well adapted to withstanding the severe jarring incident to frequent couplings and rough track.

The success or failure of any type of battery used in mine locomotives depends to a considerable extent upon the proper installation of the battery. This Company has designed a special means of securely blocking the trays in place and a method of assembly which thoroughly insulates the battery from the frame of the locomotive.

The "Ironclad-Exide" Battery is the latest and highest development of the standard "Exide" Battery, which has shown exceptionally excellent results in electric vehicle and storage battery street car service. This battery has been used in large numbers for commercial electric vehicle service and its satisfactory results in large trucks, such as are used by brewers and for other heavy haulage, proves that it will give good service in battery locomotives.

The engineers of this Company are at the disposal of customers for studying the conditions under which mine or industrial locomotives will be used and for recommending the proper type of battery for the particular service required. Since the battery is so important a factor in obtaining dependable and economical operation, it merits particular attention.

The "Ironclad-Exide" Battery has been very extensively used by the Atlas Car & Manufacturing Co., of Cleveland, Ohio; the General Electric Co., of Schenectady, N. Y.; the Jeffrey Manufacturing Co., of Columbus, Ohio; and the Westinghouse Electric & Manufacturing Co., of Pittsburgh, Pa., all of whom are manufacturers of storage battery locomotives for mine service.

Special bulletins and catalogues on the "Ironclad-Exide" Battery can be secured from the nearest Sales Office of the Company.

GOULD STORAGE BATTERY CO.

Works, Depew, N. Y. General Offices, 30 E. 42nd. St. New York

Boston—347 Newbury St.
Philadelphia—613 Lincoln Bldg.
Cleveland—1761-65 E. 18th St.
Detroit—Kerr Bldg.
Chicago—225 E. 22nd St.
San Francisco—1448 Van Ness Ave.
Los Angeles—118 E. Fico St.
Canadian Representative: R. E. T. Pringle, Toronto, Montreal, Winnipeg, Vancouver.

Gould Storage Battery

The value, in various forms of haulage, of the storage battery locomotive with its modern motors, bearings and up-to-date construction has been amply proven in numerous installations.

The battery is the vital part which must constantly withstand the brunt of shocks experienced in starting heavy loads, hauling up grades, bumping, and continually severe usage, and must perform its work reliably and profitably on a year-in-year-out basis.

The Gould Locomotive Battery
has proven by many installations, its ability to meet haulage requirements.

Designed and constructed specially for this severe service, it is not simply a standard automobile battery made to run on soft rubber tires, but is built to withstand running over hard, badly jointed tracks;

Correctly proportioned for proper weight, capacity and durability, being long past the experimental stage;

Rugged in every detail, and has exceptionally hard wear-resisting active material in the plates—an exclusive Gould feature;

Moderate in price and economical in maintenance;

Maintains its voltage even to the point of slipping the locomotive wheels under heavy starting torques and grades;

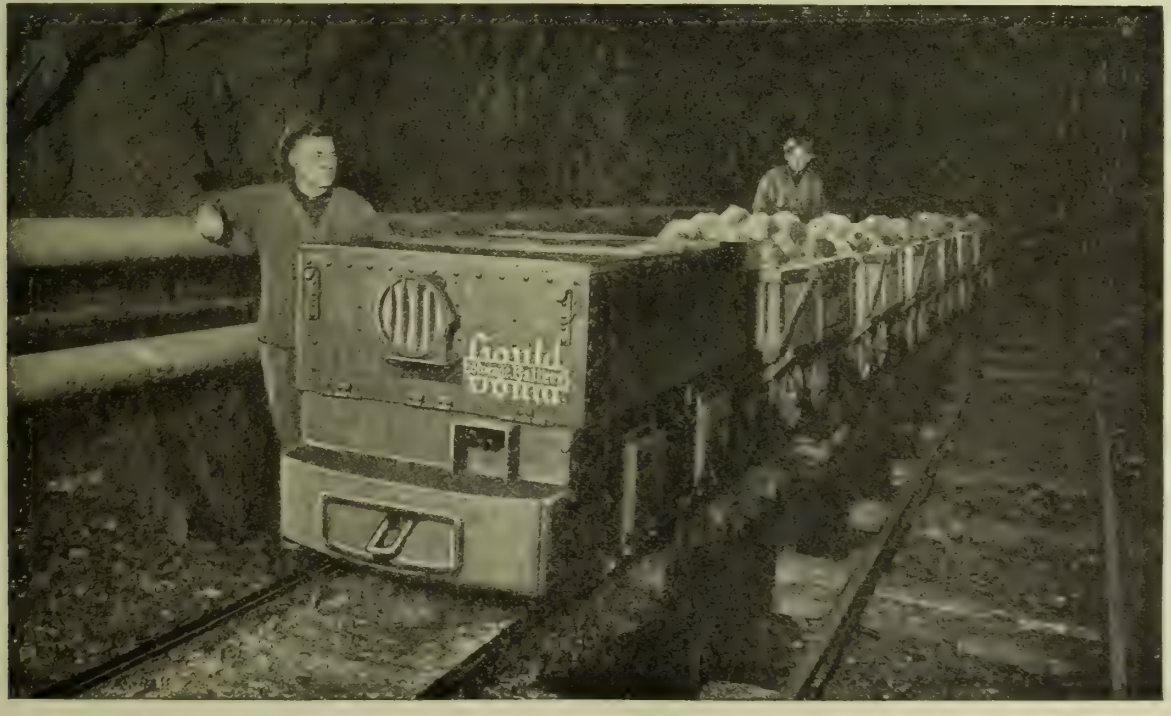
Always ready and lets the men stay at the heading on their regular job practically every minute;

Is the result of the practical application of unlimited experience in every branch of battery work and is backed by one of the oldest and largest battery companies.

The same engineering skill that developed and made practical load regulation in large electric plants, modern railroad car lighting, the storage battery car, propelling submarines under water, the electric automobile, etc., is embodied in the design and construction of our mine locomotive types of batteries.

Scores of industries successfully and profitably operate Gould Batteries.

The advice of our engineers is yours without obligating yourself in any way.



Gould Storage Batteries Have Removed the Last Elemert of Doubt as to the Economy of Storage Battery Locomotives in Mine Haulage.

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA, PA., U. S. A.

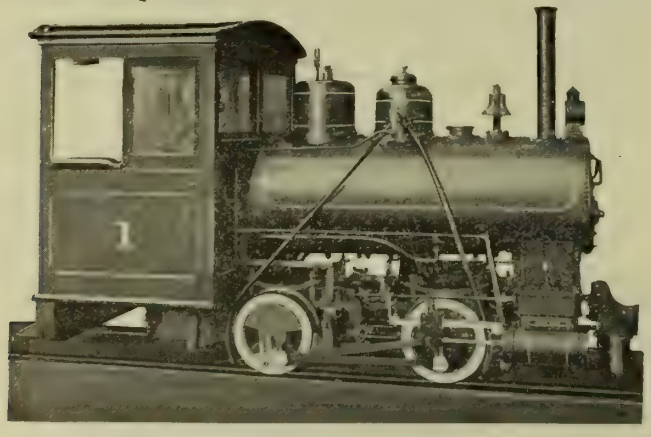
Locomotives for Every Variety of Service

BRANCH OFFICES:

New York, N. Y., 50 Church Street. St. Louis, Mo., Wright Building.
Chicago, Ill., Railway Exchange. Portland, Ore., Spalding Building.
Richmond, Va., Travelers Building.

Steam Locomotives

When selecting a type of motive power for mine service, local conditions must be carefully considered. Steam locomotives are usually unsuitable for underground work, on account of the gases which they emit; but they are well fitted for surface haulage in connection with mining and industrial operations. They are dependent upon no external source of power, and are reliable in operation and easily handled. They can, if necessary, be kept in almost continual operation.



Four-Coupled Tank Locomotive.

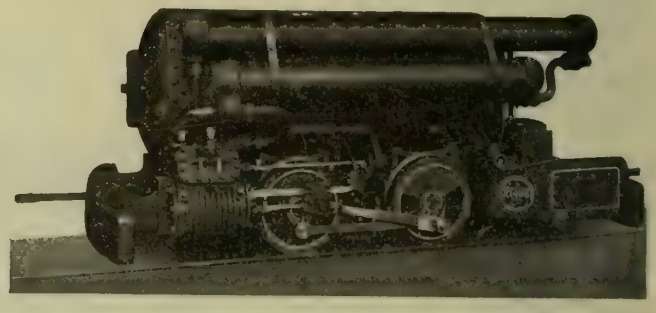
The illustration shows a small steam locomotive of the four-coupled type, built for L. B. Brydon & Co. It has a gauge of 3′ 6″, and with a total weight of only 12100 pounds, can be safely used on light or portable tracks. The supply of fuel and water is carried on the engine, thus increasing the adhesion. This locomotive can traverse very sharp curves, and is suitable for switching and hauling where runs are short.

Steam locomotives possess special advantages for heavy surface hauling in connection with mining and industrial operations. They can be built to almost any required capacity, and specially designed and equipped to meet unusual conditions of operation. The Baldwin Locomotive Works have built a large number of locomotives for this kind of work, and are prepared to submit designs and specifications covering locomotives suitable for all kinds of mining and industrial service.

Compressed Air Locomotives

Compressed air locomotives have been built, in limited numbers, for mining service. They are especially suitable for work in gaseous mines, as their use involves no fire risk. The Baldwin Locomotive Works were pioneers in the development of this type of motor, as they have been building compressed air locomotives since 1874.

The efficiency of a compressed air locomotive can be materially increased by expanding the air through two cylinders. The illustration shows a successful design of cross-compound locomotive built by The Baldwin Locomotive Works.



Compound Atmospheric Interheating Gathering Locomotive.

As the air attains an extxremely low temperature during expansion, some form of interheater is necessary in a locomotive of this type. Baldwin compound compressed air locomotives are fitted with atmospheric interheaters, which are efficient in operation and have no moving parts connected with them. The entire locomotive is simple in construction, and is designed, as far as practicable, in accordance with steam locomotive practice.

It is found in service, that the degree of saving effected by compound compressed air locomotives, varies materially in different kinds of service. Hence, before deciding upon a design of locomotive for any specified work, all the conditions of operation should be carefully studied. The experience of The Baldwin Locomotive Works will be gladly placed at the disposal of mining companies when making such investigations.

H. K. PORTER COMPANY

1200 Union Bank Building

PITTSBURGH, PA.

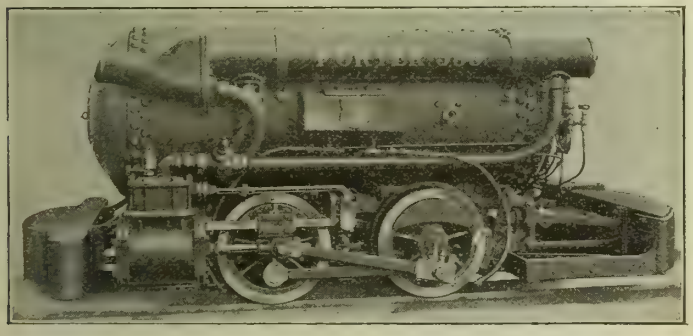
BUILDERS OF

Steam and Compressed Air Locomotives

The large illustration shows a five ton, narrow gauge steam locomotive; a thirty ton two-stage air locomotive, one of a number used by the United States Government, and a 150,000-pound switching locomotive, one of a number used in the Pittsburgh district.

Our steam locomotives have large boilers, extra strong running gear and case-hardened steel pins and bushings in the link motion. They are built to secure continuous service with a minimum charge for repairs. Our system of keeping repair parts in stock insures our customers against delays due to accidents or wear.

TWO-STAGE COMPRESSED AIR LOCOMOTIVES have superseded simple air locomotives because they do fifty per cent more work with the same quantity of compressed air materially reducing the cost of operation and the first cost of the complete equipment. The superior efficiency is obtained by providing means for the compressed air to absorb heat from the atmosphere after being chilled by doing work in the high pressure cylinder and before it enters the low pressure cylinder. This is fully explained in our catalogue. We make a specialty of compressed air locomotives, and are the original developers of two-stage expansion with atmospheric interheating. Our rights are protected by both method and apparatus patents, and are now being and will be vigorously enforced. We have devoted more time and money to the development of air haulage than any other builder and have built four or five times as many compressed air locomotives as all of our competitors combined.



Typical Two-Stage Gathering Locomotive.
Illustration shows one weighing four (4) tons.
We are prepared to furnish all sizes and designs.

We are prepared to furnish specifications and prices of suitable equipment, including locomotives, compressors, pipe line and storage tanks to meet your requirements. In other words, we offer free to anyone interested the net result of our engineering knowledge and wide experience in connection with this class of work. **Our new catalogue modern compressed air locomotives mailed free.**



MILWAUKEE LOCOMOTIVE MFG. CO.

General Office and Works at MILWAUKEE, WIS.

Sales Offices

PITTSBURGH
307-309 Westinghouse Bldg.

CHICAGO
811 Railway Exchange Bldg.

KNOXVILLE
1005 Bank & Trust Bldg.

Sales Agents

CONTRACTORS EQUIPMENT CO.
Seattle, Wash.

ECCLES & SMITH CO.
San Francisco, Cal.

Milwaukee Gasoline Locomotives

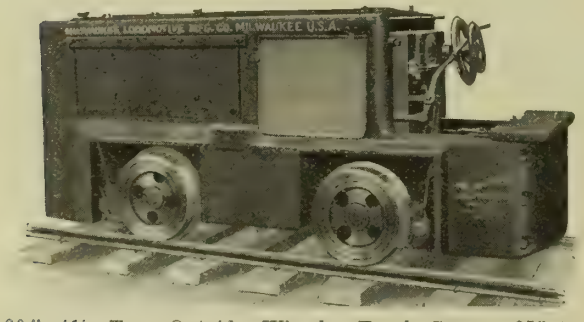
For Mine Haulage

Milwaukee Gasoline Locomotives are built in two types, in sizes from 4½ to 9 tons in weight, and for all guages of track. They are equipped with powerful 4 cylinder, 4 cycle vertical engines of special design and have two speeds both forward and backward.

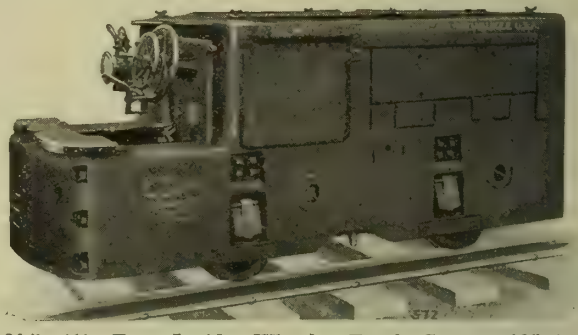
All parts are of rugged design and are made from materials of the highest quality obtainable.

Milwaukee Gasoline Locomotives are the most economical form of motive power for mine haulage and are now being extensively used by many of the largest mine operators.

"M-20" 4½ TON LOCOMOTIVES.

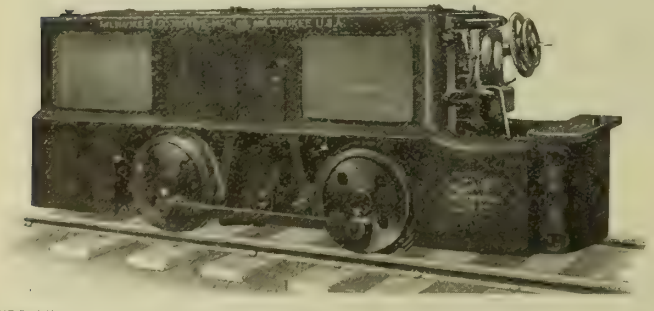


"M-20," 4½ Ton—Outside Wheels—Track Guages 35" to 48". Length 115". Width 43" to 51". Height 46".



"M-20," 4½ Ton—Inside Wheels—Track Guages 18" to 32". Length 113" to 120". Width 42" to 50". Height 46" to 49".

"M-35" 7 TON LOCOMOTIVES.

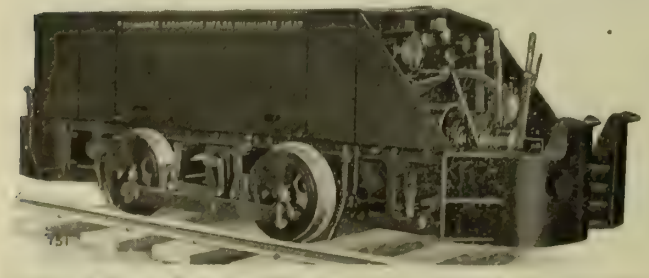


"M-35," 7 Ton—Outside Wheels—Track Guages 35" to 56½". Length 140". Width 48" to 70". Height 49".



"M-35," 7 Ton—Inside Wheels—Track Guages 18" to 32". Length 140". Width 47" to 56". Height 49".

"L-25" 5 TON LOCOMOTIVES.



"L-25," 5 Ton—Outside Wheels—Track Guages 35" to 56½". Length 144". Width 50" to 71". Height 46".



"L-25," 5 Ton—Inside Wheels—Track Guages 24" to 34". Length 144". Width 50" to 54". Height 46".

WRITE FOR CATALOGS.

GEO. D. WHITCOMB CO.

Main Office and Works
ROCHELLE, ILL.

Sales Offices

Pittsburgh, Pa. Wilkes-Barre, Pa. Ashland, Ky. Birmingham, Ala.
Denver, Colo. Seattle, Wash.

Gasoline Locomotives

Whitcomb Gasoline Locomotives have been in use in the United States in practical every day use since the Spring of 1910 and at the present time there are several hundred Locomotives in use. They are in service in Coal Mines, Limestone Mines and Quarries, Lead and Zinc Mines, Iron Mines and around industrial plants and can be used in any service where a self contained haulage Locomotive, free from dirt and smoke is desired.

In under ground work some provision has to be made for ventilation, but this is easy to provide.

The Whitcomb Gasoline Locomotive is driven by four cylinder four cycle heavy medium speed engines. The light automobile type of engine is not used.

The drive is by means of heavy roller chains, a double drive from jack shaft to front axle, and a single drive from front to rear axle making all four wheel drive wheels—thereby gaining the greatest tractive effort.

The cooling is secured by spraying the water into two cast iron cooling boxes and driving air through the spray by means of a Sirrocco Type Fan. The air coming in direct contact with the water giving highest efficiency. These boxes are easily cleaned and are not liable to injury like an automobile type radiator.

Transmission provides for two speeds in either direction, and the locomotive operates equally well in either direction. Ordinarily the low speed is four miles per hour and the high speed is eight miles per hour with the engine running at normal speed. The engine can be run both above and below normal speed therefore a range of speed from two miles to ten miles per hour is available.

The Whitcomb Gasoline Locomotive is built with wheels inside or outside of frame—with or without cabs—for all gauges of track from 18″ to 56½″, and in sizes from 2½ tons up to 16 tons in weight.

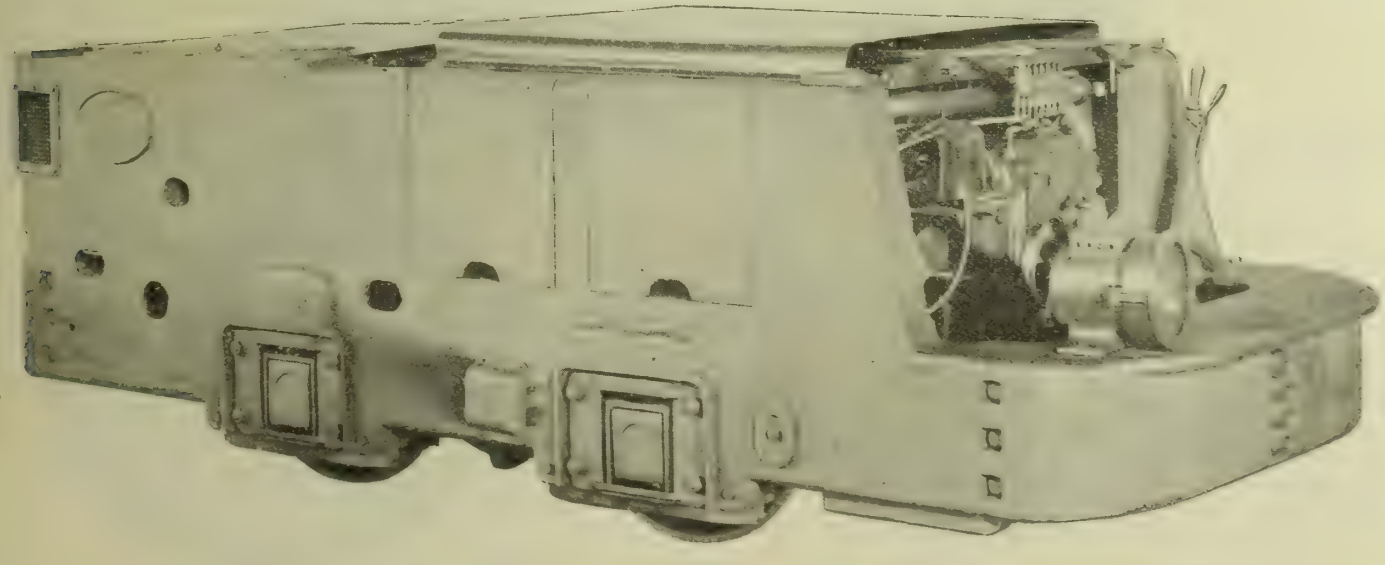
The locomotives will exert a tractive effort in starting equal to about 25% of the weight of the locomotive and will develope a constant draw bar pull on the level when working in low gear equal to 20% of the weight of the locomotive.

Based on a draw bar pull of 20% of the weight of the locomotive on the level, the hauling capacity in tons of 2000 lbs. per ton of weight of locomotive is as follows:

Rolling Friction or Resistance of Cars Per Ton Gross Weight on the Level.

	15lb	20lb	25lb	30lb	35lb	40lb
On Level	26.6	20.	16.	13.3	11.4	10.
Against ½ of 1% Grade	15.6	13.	11.1	9.7	8.7	7.8
" 1% "	10.8	9.5	8.4	7.6	6.9	6.
" 1½% "	8.2	7.4	6.7	6.1	5.7	5.3
" 2% "	6.5	6.	5.5	5.1	4.8	4.5
" 2½% "	5.4	5.	4.6	4.4	4.1	3.9
" 3% "	4.5	4.2	4.	3.8	3.6	3.4
" 3½% "	3.9	3.7	3.5	3.3	3.1	3.
" 4% "	3.3	3.2	3.	2.9	2.8	2.6
" 4½% "	2.9	2.8	2.7	2.6	2.5	2.4
" 5% "	2.6	2.5	2.4	2.3	2.2	2.1

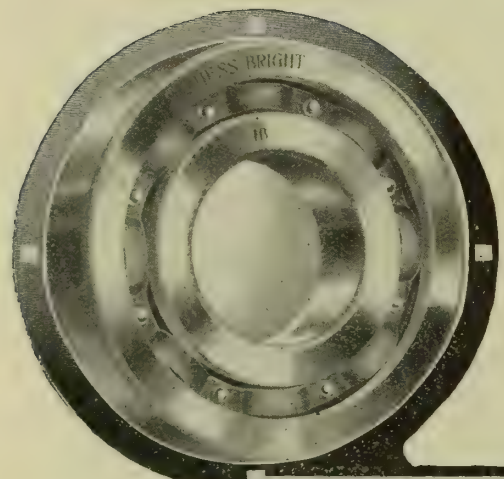
Full estimates of cost of installation and operation will be submitted on request.



The Hess-Bright Manufacturing Company

Front Street and Erie Avenue
PHILADELPHIA, PA.

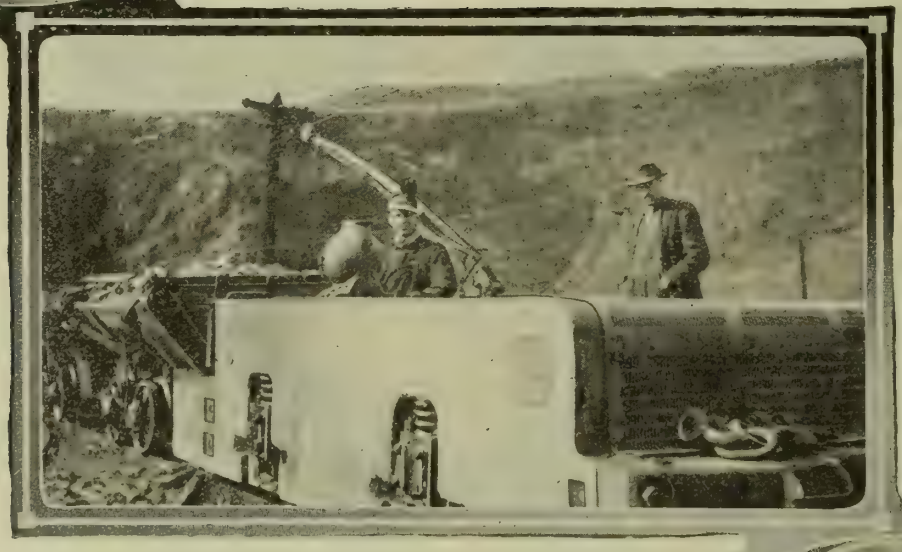
HESS-BRIGHT BALL BEARINGS

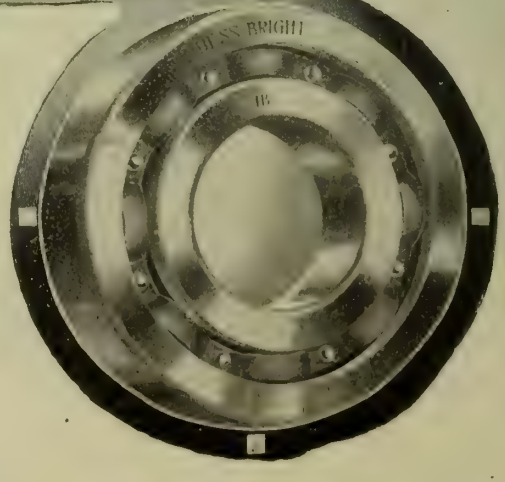


We do not hesitate to admit that HESS-BRIGHT Ball Bearings are the highest priced ball bearings used on mining locomotives.

We do not hesitate, because we feel that the higher price is justified by the superiority of the bearing—superiority proven by service.

We feel that it is a tribute and an achievement for a bearing to sell extensively in every field, and to be used exclusively by many concerns in the face of this higher price.





Hess-Bright Bearings have been tested out more thoroughly in mine service than any other bearings; their success in maintaining the air gap on armature shafts constant through years of hard service is remarkable.

We ask mine motor buyers to consider that when buying locomotives they may have this superior bearing on their machines **Simply by Specifying "Hess Brights" to the Manufacturer.**

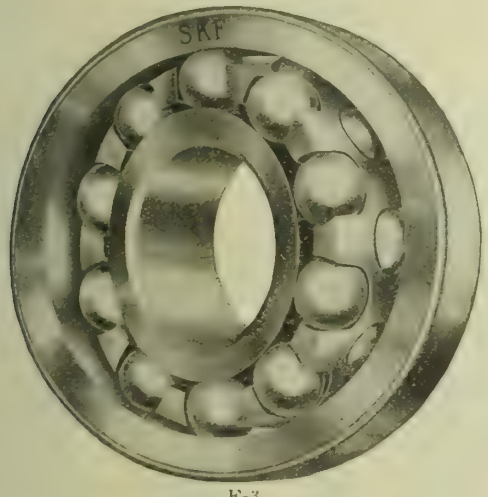
S K F BALL BEARING CO.

50 Church St., New York City

Ball Bearings for Mining Locomotives and Machinery

Products

We manufacture S K F ball bearings for mining locomotives, coal cutting machinery, mine cars, mine fans, etc.



F-3

S K F Self-aligning, Double Row Ball Bearing.

Application of S K F Ball Bearings to Mining Locomotive Motors.

The distinctive advantages of this ball bearing application are as follows:

The Armature Cannot Drop Onto Pole Pieces

by reason of the fact that S K F Ball Bearings, after long service show no measurable wear; they therefore maintain the original armature air gaps. This eliminates the necessity of rewinding the armature, renewing the shaft, and obviates other losses incidental to having the entire locomotive out of commission as a result of the dropping of the armature.

Durability is Obtained

because rolling is substituted for rubbing friction. Bearing surfaces, being of the highest grade of Swedish steel, eliminate the uncertain wearing quality of plain bearings.

A Much Higher Carrying Capacity

and greater ability to accept heavy shocks, caused by quick starting of the motors, are to be found in S K F Ball Bearings. A double row of balls, staggered in the raceways, gives the best possible and most uniform distribution of the load, with a high safety factor.

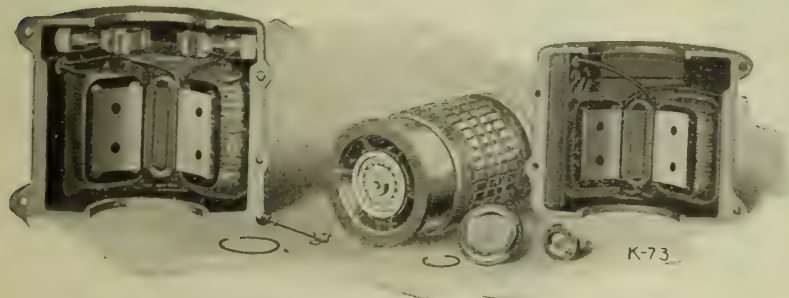
Self Alignment

in S K F Ball Bearings is a distinctive feature which renders them more readily applied and which, in addition to this, allows the bearings to yield to any sudden impulses caused by shock in the driving gear.

Ample Provision for Lubrication

is accomplished by using large lubricating chambers.

Actual experience has demonstrated that the bearing requires lubrication at infrequent intervals. The lubricant chambers are carefully sealed against the leakage of lubricant, there being on either side of the bearing, sealing grooves which fit close to the shaft and prevent the leakage of lubricant from around the bearing, either along the shaft into the pinion casing or onto the opposite side into the armature or field windings.



Mining Locomotive Motor Disassembled showing the S K F Ball Bearings.

PENNSYLVANIA CASTING & MACHINE WORKS

PITTSBURGH, PA.

Manufacturers

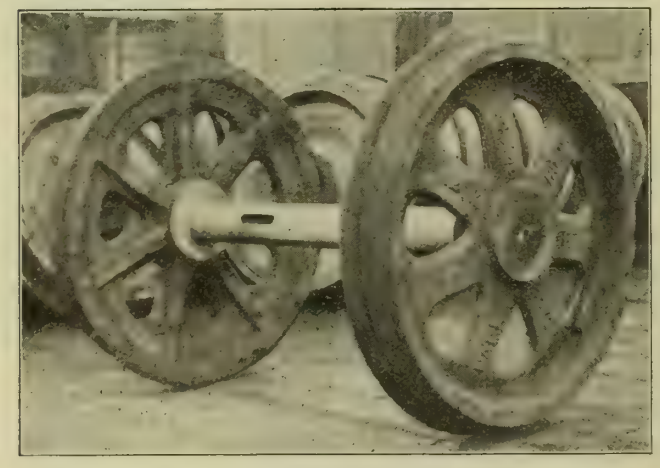
Wheels of Every Description

Products.

Wheels of every description for mining locomotives, dump cars and standard M. C. B. freight cars.

Our Facilities.

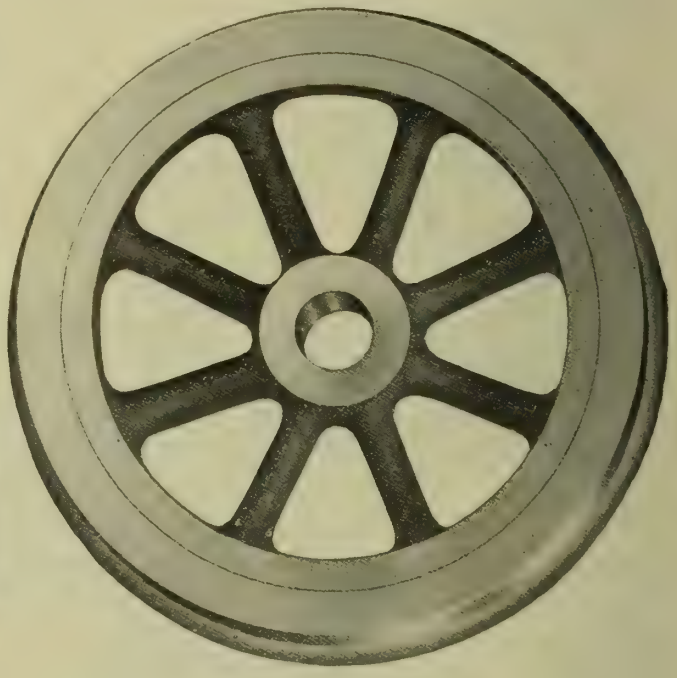
We carry in stock at all times wheels and axles for all types and makes of mining locomotives, thus insuring you quick delivery. We also specialize in mounting new wheels on either old or new axles.

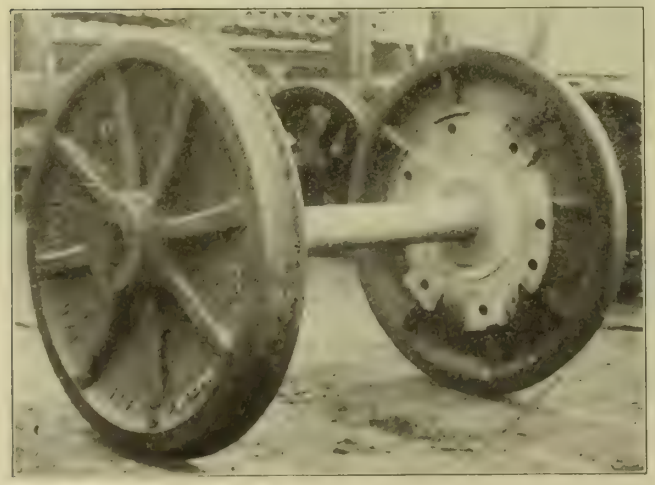


Baldwin, Westinghouse, Jeffrey, Morgan-Gardner Locomotive Wheels.

Steel Tired Wheels.

We supply steel tired wheels complete, or can furnish steel tires properly machined for your refitting to old centers.





Goodman Locomotive Wheels.





Write Us for Particulars.

R. D. NUTTALL COMPANY,

PITTSBURGH, PA.

MANUFACTURERS OF

NUTTALL PRODUCTS FOR MINING MACHINERY.

Distributors of Nuttall Products

Geo. E. Watts, 1526 Candler Bldg., Atlanta, Ga.
Chas. N. Wood Co., 79 Milk St., Boston, Mass.
Westinghouse E. & M. Co., Lewisohn Bldg., Butte, Mont.
Westinghouse E. & M. Co., 39 So. La Salle St., Chicago, Ill.
Westinghouse E. & M. Co., 418 Main St., Dallas, Texas.
Westinghouse E. & M. Co., 429 17th St., Denver, Colo.
Westinghouse E. & M. Co., 1012 Baltimore Ave., Kansas City, Mo.
Pierson, Roeding & Co., Los Angeles, Cal.
Electric Service Supplies Co., 17th and Cambria Sts., Philadelphia, Pa.
Union Electric Co., Terminal Warehouses, Pittsburgh, Pa.
Westinghouse E. & M. Co., Nat. Bank Commerce Bldg., St. Louis, Mo.
Westinghouse E. & M. Co., 212 S. W. Temple St., Salt Lake City.
Pierson, Roeding & Co., New Montgomery Ave., San Francisco.
Pierson, Roeding & Co., Colman Bldg., Seattle, Wash.
Ernest Demoly, 43 Rue de Trevise, Paris, France.
Giovanni Chechetti, Piazza Sicilia 1, Milan, Italy.
John Millen & Sons, Montreal, Canada.

Nuttall Mining Products

The Nuttall Company's removal in 1912 to its new plant on Harrison avenue, Pittsburgh, and the subsequent additions to its facilities, have resulted in doubling its former capacity.

Its principal products are gears, pinions and trolleys for mining and haulage locomotives, gearing for all types of mining machines; the new plant includes the best equipped heat treating department in the country.

By the Nuttall Processes a forged steel gear or pinion of 70000 to 85000 pounds normal tensile strength and surface hardness of 176 to 196 Brinell* has after "SS" treatment a tensile strength of 110000 to 125000 pounds, a surface hardness of 302 to 264, and all the normal toughness of the untreated steel is retained. The result is a gear capable of giving twice the wear of untreated gearing at an increase of only 27% in cost. This means, in concrete figures, that if an untreated steel gear costing $12.50 will last for 100000 miles on a mine locomotive, an "SS" gear costing $15.90 will last for 200000 miles, and the economy in using the "SS" grade is immediately apparent. In one case the mileage is obtained at a cost of $25.00 and the expense of two gear installations; in the second case the cost of the same mileage is $15.90 and the expense of one installation; which is equivalent to an ultimate saving of $9.10 or 36.2%, plus the cost of one installation and removal.

By the BP Process a tensile strength of 115000 to 130000, a Brinell hardness of 418 to 555, and a service life of 350000 miles are obtained at an increased cost of about 35%. Thus untreated steel gears costing $12.50 and lasting 100000 miles, will cost $44.00 per 350000 miles and a BP gear capable of giving the same mileage will cost $17.00. In this case the ultimate saving is $27.00 or 61.5% plus the cost of three installations and three removals.

The tensile strength of case hardened gearing cannot be determined by the usual method as the steel is so hard that a test piece cannot be machined out, but it can be closely estimated from the hardness, which is 555 to 650, and is about 100000 to 140000 pounds.

Its hardness insures at least 5 times the mileage of untreated gearing or about 500000, and its cost is double. The economy depends upon annual locomotive mileage and service conditions, but in general the cost of untreated gears to give 500000 miles would be $62.50 distributed over a period of years, plus the expense of five installations and removals, making the cost per thousand miles about 8 cents. One CH grade gear giving the same mileage will cost $25.00, a saving of $37.50 or 60%, plus renewal expense, and its cost per thousand miles will be 5 cents.

All of the steel gearing for mining machines may be heat treated by any of these processes, at about the same percentages of increased cost, with the same proportionate increase in life.

Nuttall trolleys are the standards of the Westinghouse and General Electric Companies and have been adopted as standard on many mine locomotives of other makes. There are ten types, in addition to many special trolleys designed for unusual requirements, and there is a Nuttall trolley for every condition encountered in mine or industrial haulage service.

One department makes special gearing only—that is, miscellaneous, made to order gears and pinions, for hoists, pumps, crushers, machine tools, etc., and carries a stock of over 20000 patterns which includes spurs, bevels, spirals, worm gears, internal gears, herringbone gears and racks in all pitches and sizes. This department gives special attention to breakdowns and repair jobs.

Another department is devoted to flexible couplings, making both rubber buffer type and two styles of spring type. These obviate the tedious labor and expense of aligning coupled shafts perfectly and cushion the shocks due to uneven loads on machines. The reduced wear on bearings alone saves the cost of flexible couplings many times over, and their absorption of vibration adds many years to the life of machines which would be jarred to ruin if solidly coupled.

*In the Brinell Hardness Testing Machine a hardened steel ball, ten millimeters in diameter, is forced into the surface being tested, at a pressure of 6600 pounds, and the diameter of the impression made is measured with a microscope.

The harder the steel, the smaller the impression and its dimensions indicate the hardness, and approximate tensile strength.

The hardness is expressed in the Brinell Scale, in which 600 indicates glass hard, and 150 soft.



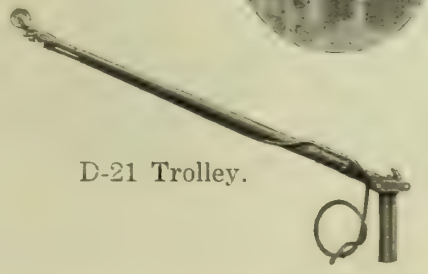
Goodman Westinghouse Morgan-Gardner
Locomotive Gears.



Westinghouse Pinion and Blank.



D-20 Trolley.



D-21 Trolley.

THE TOOL STEEL GEAR & PINION CO.

CINCINNATI, OHIO

Huntington Supply & Equipment Co.
Huntington,
W. Va.

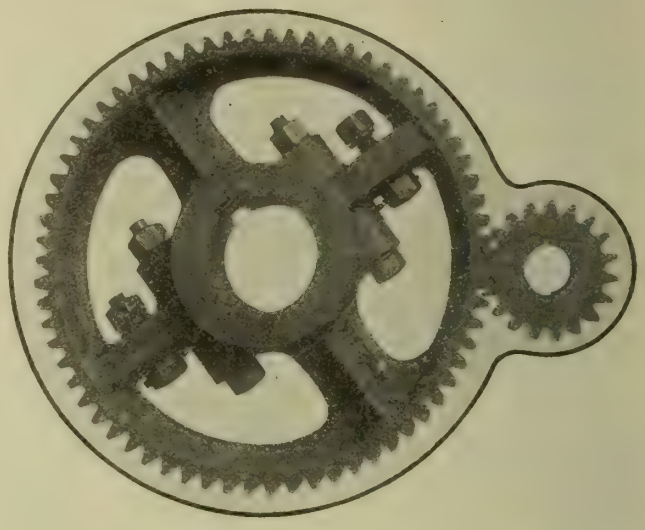
J. P. Biggert,
Oliver Building,
Pittsburgh.

U. S. Metal & Manufacturing Co.,
165 Broadway,
New York

Products

"Tool Steel" Gears and Pinions for mining locomotives and machinery.

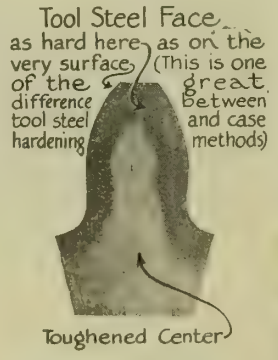
Gears and pinions constitute a considerable item in maintenance expense of coal mining equipment, both from direct costs and the costs and time lost in making replacements. Realizing this, The Tool Steel Gear and Pinion Company is now offering for coal mining equipment the same specially hardened gear and pinion which it has been selling to electric railway companies for the last eight years. A number of the larger coal mining companies have already adopted "Tool Steel" gears as standard in their replacements.



The photograph above is of a "Tool Steel" motor gear and pinion after 2½ years' use. In this particular service the average life of the untreated pinion was only six months.

The "Tool Steel" wearing face takes on a brilliant polish and virtually eliminates friction.

The toughened center withstands all shocks and strains in severe service.

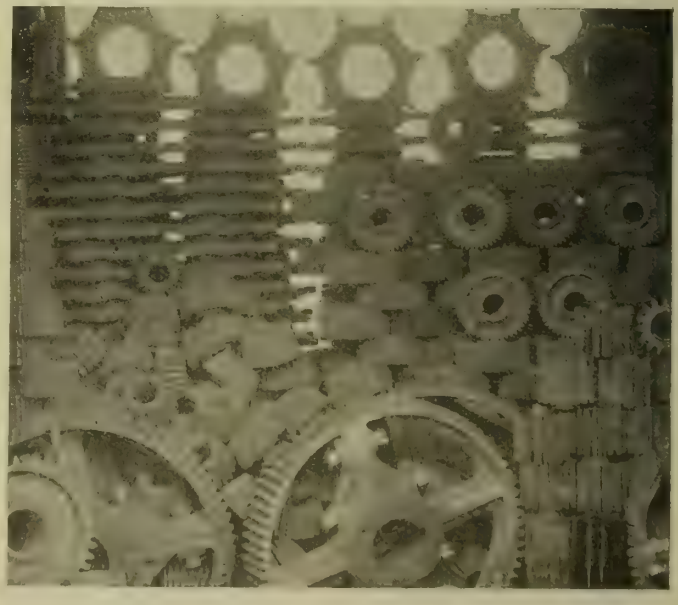


Increased Life of "Tool Steel" Gears

In repeated tests in the electric railway and coal mining industries, "Tool Steel" gears have given life from four to seven times as great as that averaged from ordinary untreated steel, from three to six times as great as that of oil treated steel and from two to four times as great as case hardened material.

Guaranteed Life

"Tool Steel" gears are sold under a positive guarantee to wear at least three times as long as untreated steel.



This illustrates some of the classes of coal mining gears we are furnishing in quantities

BULLETINS AND QUOTATIONS FURNISHED ON REQUEST.

THE VAN DORN & DUTTON CO.

GEAR SPECIALISTS

New York CLEVELAND San Francisco

"Van Dorn & Dutton" Grade HARDENED and Grade TREATED gears and pinions fill every requirement of efficient use in mining locomotives and machinery.

The same qualities that have distinguished "V. D. & D." Gears in the gruelling test of modern traction service have made them the standard equipment of many leading mining interests.

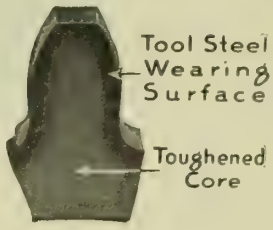
To cut down your operating and maintenance costs

Look to Your Gears

—Know that they are right—that they are giving steady, dependable service.

These are outstanding features of "V. D. & D." Gears and Pinions:

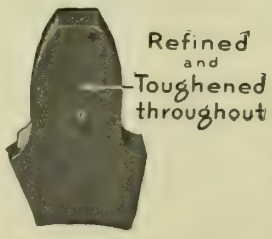
1. Unexcelled manufacturing facilities.
2. The highest standards of workmanship.
3. Years of experience as specialists in gear making.
4. A most careful selection of materials.
5. Special attention to deliveries.



Grade HARDENED

For General Service.

Maximum wear and strength are secured by our special process of hardening. The wearing surface is converted into tool steel to insure wear; at the same time the core is toughened to give strength.



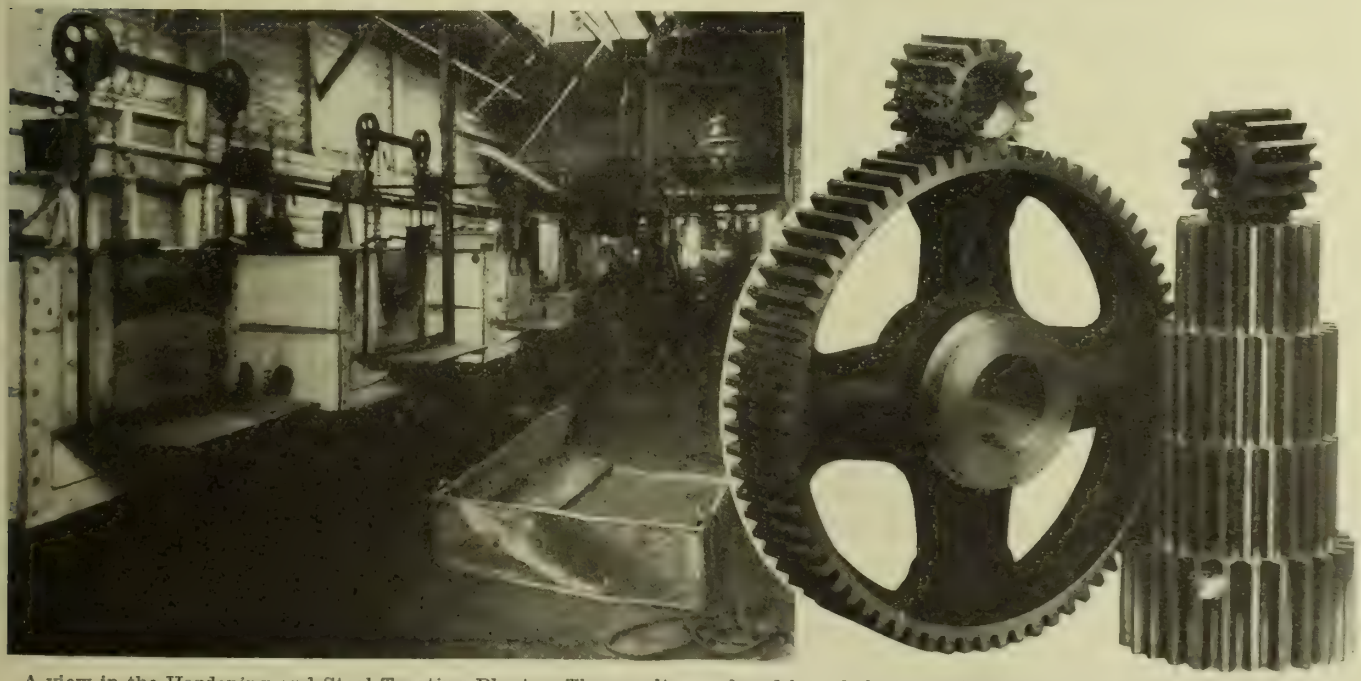
Grade TREATED

For the Heavy Duty Service.

Great strength and long service are outstanding features of our grade Treated. Our special process of heat treatment refines and toughens the steel throughout, reducing breakage to a minimum.

We are pioneer gear makers. We know our business and we know yours—as far as gears are concerned. We have made a study of your conditions and manufacture gears to meet those conditions.

A copy of our booklet on "Gear ond Gear Cutting" is well worth having. Write for it.



A view in the Hardening and Steel Treating Plants. The results produced here help to establish the "V. D. & D." reputation for a universally satisfactory product.

SEND US YOUR SPECIFICATIONS. WE WILL BE GLAD TO QUOTE PRICES.



MINING MACHINE SECTION

Engineering Data

Chart—Cost of Coal.

Specification Data for Mining Machines.

The following manufacturers have catalogue descriptions in this section:

Buettner & Shelburne Machine Co.
Fairmont Mining Machinery Co.
Fort Wayne Electric Works.
Goodman Mfg. Co.
Howells Mining Drill Co.
Ingersoll-Rand Co.
Jeffrey Mfg. Co.
Morgan-Gardner Electric Co.
Pneumelectric Machine Co.
Prox, Frank, Co.
Scranton Electric Construction Co.
Sullivan Machinery Co.
Tracy, Bertrand P.

For additional descriptions of Mining Machinery and Equipment, not appearing in this section, refer to Index of Products in front of book.

Specification Data for Mining Machines

Type required

- Chain Breast
- Shortwall
- Overcutting
- Puncher—Air
- Puncher—Electric

Kind of Coal.

Thickness of Vein.

- Thinnest place
- Average Thickness

Location of Impurities.

Kind of Impurities.

Roof

- Rock
- Slate
- Wet
- Dry

How far back from face can posts be set?

No. Rooms opened up.

- Width.

Voltage—character of current.

Distance from power plant to limit of workings.

Switch radius.

Clearance between rail and rib—entries.

Clearance between rail and rib—room necks.

Pick Rate

Pick yardage.

Machine yardage.

Rate per day—Runner—Scraper. Hours per shift.

Loading rate

- Shooting
- Propping
- Track Laying.

Will machines be used on ribs?

Track Gauge—Kind of rail.

For Chain Breast Machines

- Cut—depth.
- Cut—width.
- Length of cable required.
- Open or closed type motor.
- Self propelling or not.

Shortwall Machine

- Depth of cut.
- Length of cable required.
- Self propelling or not.

Overcutting Type

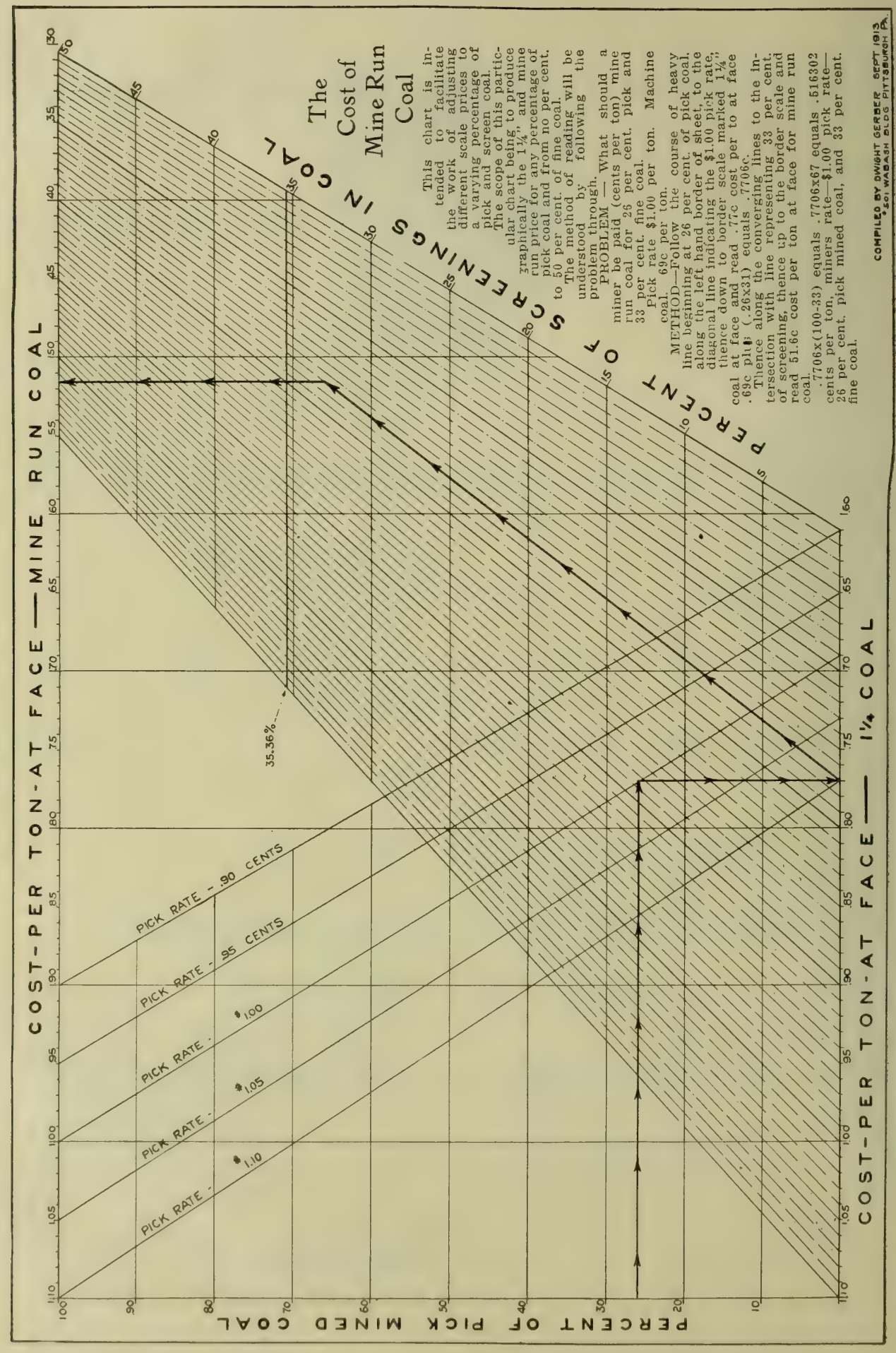
- Width of place to be cut.
- Location of impurities.
- Charcter of impurities.
- Length of cable required.
- Self propeller or not.

Puncher Type—Electric

- (See general information.)

Puncher Type—Air

- Air pressure at face.


The Cost of Mine Run Coal
This chart is intended to facilitate the work of adjusting different scale prices to a varying percentage of pick and screen coal. The scope of this particular chart being to produce graphically the 1¼", and mine run price for any percentage of pick coal and from no per cent. to 50 per cent. of fine coal.
The method of reading will be understood by following the problem through.
PROBLEM — What should a miner be paid (cents per ton) mine run coal for 25 per cent. pick and 33 per cent. fine coal.
Pick rate $1.00 per ton. Machine coal 69c per ton.
METHOD—Follow the course of heavy line beginning at 25 per cent. of pick coal, along the left hand border of sheet, to the diagonal line indicating the $1.00 pick rate, thence down to border scale marked 1¼"; coal at face and read .77c cost per to at face .69c plus (.26x31) equals .7706c.
Thence along the converging lines to the intersection with line representing 33 per cent. of screening, thence up to the border scale and read 51.6c cost per ton at face for mine run coal.
.7706x(100-33) equals .7706x67 equals .516302 cents per ton, miners rate—$1.00 pick rate—26 per cent. pick mined coal, and 33 per cent. fine coal.
COMPILED BY DWIGHT GERBER SEPT 1913
501 WABASH BLDG PITTSBURGH PA.
COST-PER TON-AT FACE — MINE RUN COAL
PERCENT OF SCREENINGS IN COAL
PERCENT OF PICK MINED COAL
COST-PER TON-AT FACE — 1¼ COAL
35.36%
PICK RATE - .90 CENTS
PICK RATE - .95 CENTS
PICK RATE - 1.00
PICK RATE - 1.05
PICK RATE - 1.10

Coal Production for Various Seam Thicknesses

Short Tons

Density of Coal Assumed as 1.28, or
25 Cubic Feet per Ton of 2,000 Pounds

Height of Coal, Inches	Tons of Coal, per Acre	Tons per Square Foot Undercut	Depth of Undercut		
			5 Ft.	6 Ft.	7 Ft.
			Tons per Lineal Foot of Face		
24	3485	0 08	0.40	0.48	0.56
28	4070	.09	.47	.56	.65
32	4645	.11	.54	.64	.75
36	5225	.12	.60	.72	.84
40	5810	.133	.67	.80	.93
44	6390	.15	.73	.88	1.02
48	6970	.16	.80	.96	1.12
54	7840	.18	.90	1.08	1.26
60	8715	.20	1.00	1.20	1.40
66	9580	.22	1.10	1.32	1.54
72	10455	.24	1.20	1.44	1.68
78	11320	.26	1.30	1.56	1.82
84	12210	.28	1.40	1.68	1.96
90	13070	.30	1.50	1.80	2.10
96	13940	.32	1.60	1.92	2.24
100	14525	.333	1.67	2.00	2.33
104	15100	.347	1.73	2.08	2.42
108	15680	.36	1.80	2.16	2.52
112	16260	.373	1.87	2.24	2.61
116	16845	.387	1.93	2.32	2.70
120	17425	.40	2.00	2.40	2.80
126	18295	.42	2.10	2.52	2.94
132	19165	.44	2.20	2.64	3.08
138	20040	.46	2.30	2.76	3.22
144	20900	.48	2.40	2.88	3.36

GOODMAN MANUFACTURING CO.

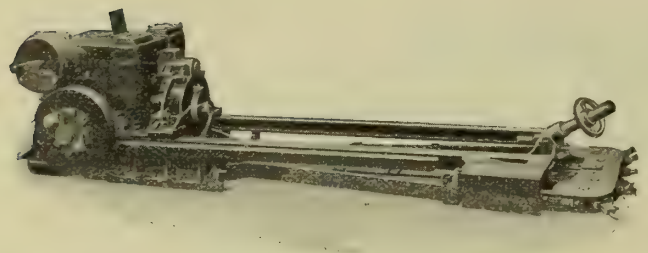
ELECTRIC MINING MACHINERY

General Office and Works: Chicago, Ill., Halsted Street at 48th Place.

BRANCH OFFICES AND REPRESENTATIVES:

PITTSBURGH, PA.—Farmers Bank Bldg.
CINCINNATI, O.—220 East Fourth Street.
CHARLESTOWN, W. VA.—Union Bldg.
BIRMINGHAM, ALA.—Brown-Marx Bldg.
NASHVILLE, TENN.—Stahlman Bldg.
ST. LOUIS, MO.—Boatmen's Bank Bldg.
DENVER, COLO.—Boston Bldg.
SEATTLE, WASH.—512 First Ave., South.

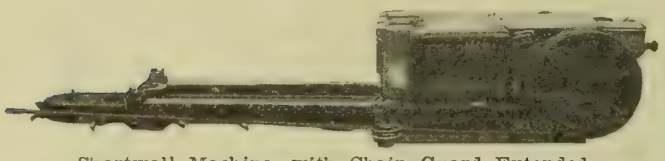
AUSTRALASIA—Wm. Adams & Co., Sydney, N. S. W.



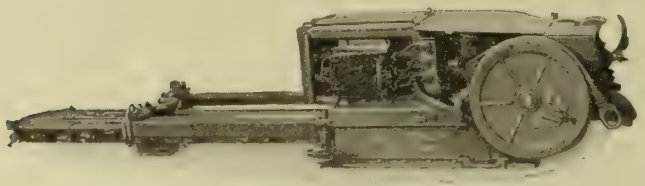
Standard Electric Breast Machine, with Guarded Chain and Flame Proof Electrical Parts.



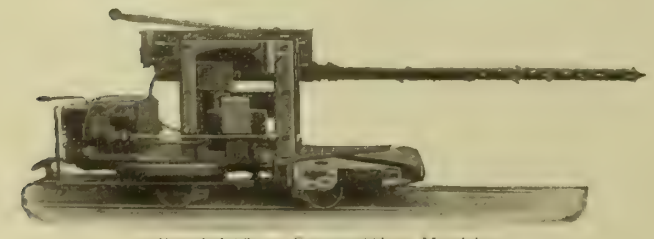
Standard Breast Machine with Balanced Air Engine. Convertible to Electric.



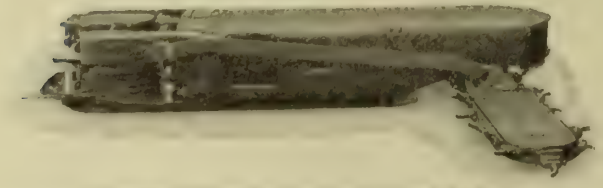
Shortwall Machine, with Chain Guard Extended as in Dragging to the Face.



Shortwall Machine, for Alternating Current.



Straightface Overcutting Machine.



Longwall Machine for Continuous Faces.

Goodman Electric Coal Cutters are made for operation by either direct or alternating current.

All parts are designed with generous proportions, for needed strength and durability. Gears especially are large and ample.

Electric machines may be furnished with inclosed parts, for operation in gassy places.

Air driven machines may be used in gassy mines, or where compressed air already is available.

Breast and Shortwall types are furnished with drop-front trucks (patented), making loading and unloading easy, rapid and safe.

Guarding of cutter chains in all types affords protection to men and fullfills all legal requirements.

The Shortwall machine operates entirely by its own power, has no subsidiary parts for use in sumping, and by its methods of control enables the runner to meet positively and quickly all the varying conditions of his cutting.

The Straightface machine is an overcutter, which works from position on the room track and maintains a square place, with straight face and ribs. It will cut at any height in the seam, from very top to within a few inches of the bottom. It may mine in or near a dirt band which then may be kept out of the loaded coal.

The Straightface machine operates wholly by its own power, loses no time in unloading and reloading at the face, and otherwise proves itself a full-functioned machine. It does what no other machine has ever attempted, and similar results therefore are not expected of any other machine.

Longwall machines are built for direct or alternating current. They are made either reversible or non-reversible, and all are equipped with tilting arms to enable following the floor undulations.

Full Descriptions in:—

Bulletin 101—Breast Machines.
Bulletin 103—Shortwall Machines.
Bulletin 121—Straightface Machines.

MORGAN-GARDNER ELECTRIC CO.

68 E Adams St., Chicago, Ills.

COAL CUTTERS

Heavy Strong Machines for difficult cutting.

Light Speedy Machines for easy cutting.

Machines for thin, medium or thick veins.

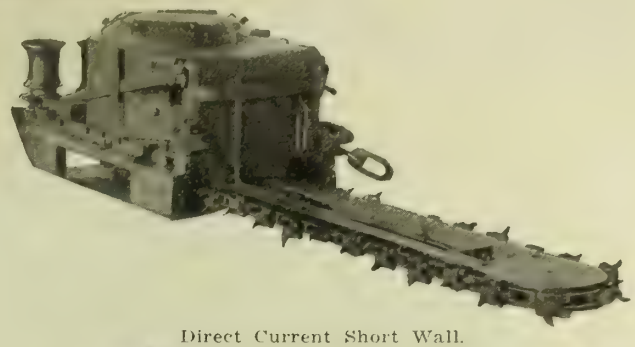
Breast, Short Wall, Long Wall, Overcutting and Special machines.

Machines with standard or narrow kerf, single, double, or modified double bit chains—Cutterarms of any length to suit your mining conditions.

Now successfully cutting Bituminous, Lignite and Anthracite Coal, Dirt Bands and Fire Clay.

Coal Cutters with all modern improvements—Motored and equipped to do their work without distress to any of their parts, without waste of power and without unnecessary or excessive drains upon the current supply.

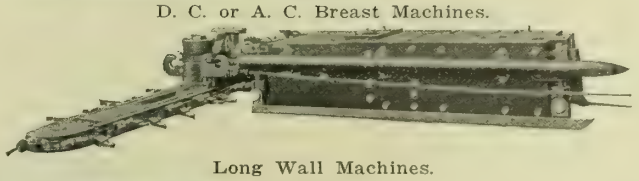
Designed and built—as a whole and in every detail—for low cost of maintenance—long life—effective and satisfactory service.



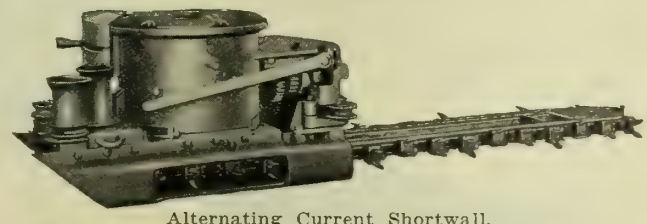
Direct Current Short Wall.



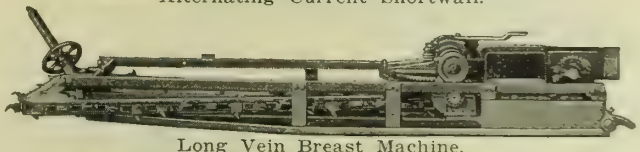
D. C. or A. C. Breast Machines.



Long Wall Machines.



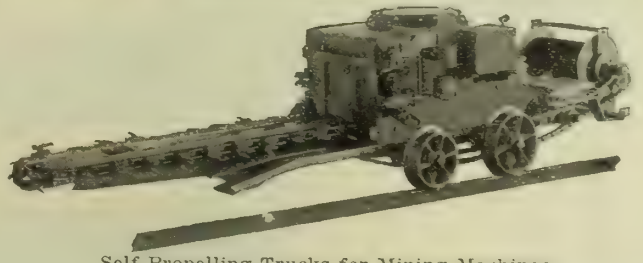
Alternating Current Shortwall.



Long Vein Breast Machine.



Overcutting Machine.



Self Propelling Trucks for Mining Machines.

MORGAN-GARDNER
68 E ADAMS ST "ELECTRIC CO." CHICAGO U.S.A.

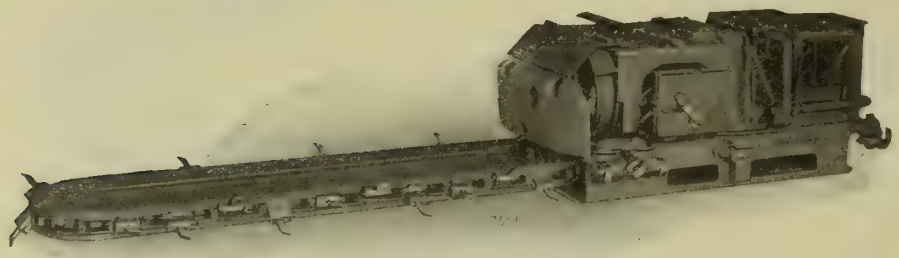
THE JEFFREY MANUFACTURING COMPANY

SALES OFFICES:
New York.....50 Dey St.
Philadelphia.....Real Estate Bldg.
Canadian Works.....Montreal
Pittsburgh.....Farmers Bank Bldg.
Charleston ..... West Virginia

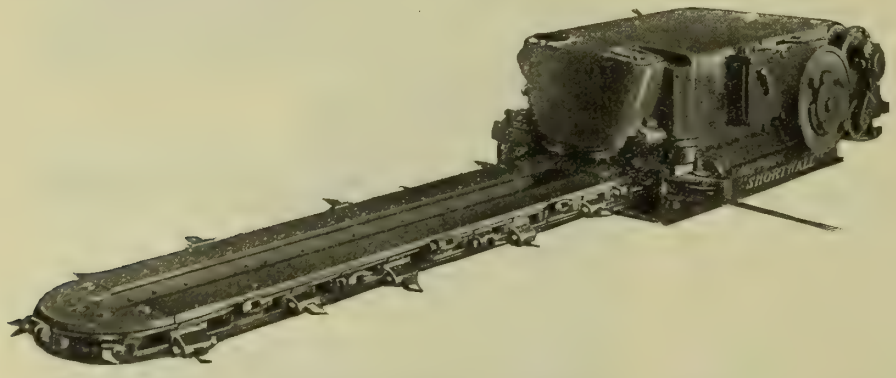
Main Office and Works:
962 North Fourth Street
Columbus, Ohio

SALES OFFICES:
Chicago .....McCormick Bldg.
Birmingham .....Brown-Marx Bldg.
Denver .....First National Bank Bldg.
Broadwell, O.....H. H. Townsend
Middlesboro, Ky., Middlesboro Hotel

"Under-Cutting" Coal Mining Machines

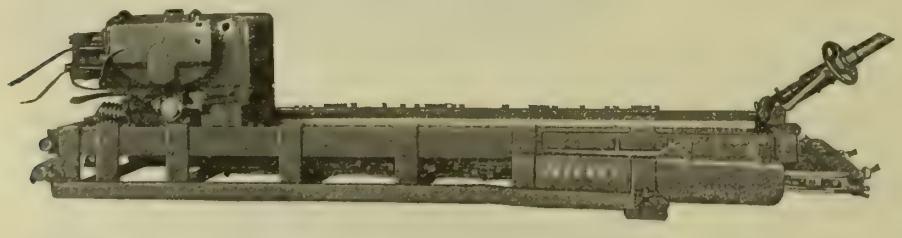


Jeffrey 28-A Shortwall Mining Machine with Class 11 Starting Box. This type of machine has an over-all height of 24". Starting box is designed to be either open or totally enclosed, and is of the Magnetic Blow Out Type. Armature shaft is equipped with ball bearings, and the construction of the motor will permit of totally enclosing where necessary for gaseous mines. **Write for Bulletin No. 118-62.**



Jeffrey 35-A Shortwall Mining Machine. Designed for Extra Heavy Cutting. Stands 22" high and is equipped with heavy duty motor.

Main features are: Large Capacity, Totally Enclosed Motor, Heavy Gearing and Power Driven Retarding Drum, the latter being independent of the Feed Mechanism. **Write for Bulletin No. 128-62.**



27-B Breast Type Coal Cutter.



"Longwall" Type Machines for continuous cutting are made in two sizes known as 24-A and 36-A.

Fr Contiuous Cutting in Room or Pillar Mining, JEFFREY SHORTWALL COAL CUTTERS have proven their superiority over all other types of side-cutting machines.

They embody the best in Electrical and Mechanical Design and Construction.

All parts are strongly built to meet every mine requirement—with large reserve power to carry overloads or excessive strains—which means small cost for upkeep.

Self-Propelling

They unload from the truck, cut across the coal face, move about the room and load on the truck all by their own power.

Especially adapted for use in bad roof, as props can be set close to the coal.

The "Baby Shortwall Machine"

or 36-B, our latest type, is especially adapted for work in low veins.

Standard Breast Type Coal Cutters

Made in various types and sizes known to the Coal Mining Industry as 17-A. 19-A, 21-A, 27-B and 16-D.

Used extensively for driving entries and cutting narrow faces.

For Continuous and Longwall System of Mining

The JEFFREY 24-A Mining Machine embodies distinctive features in design and construction, such as Noiseless Worm Gearing between motor and drive sprocket; Compactness; Power Turned Cutter Arm; Machine is automatically held up to the work without the use of Props or Jacks.

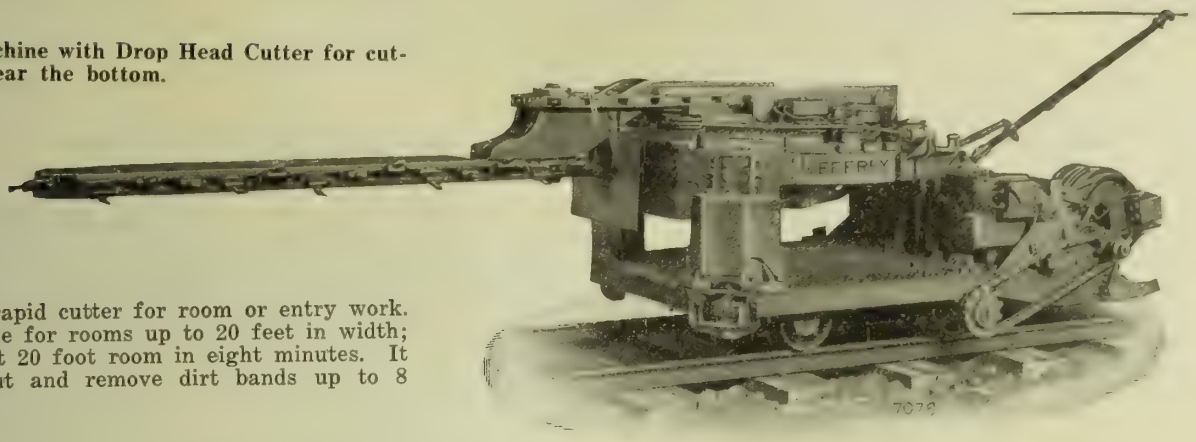
Write for Bulletin No. 18-D.

THE JEFFREY MANUFACTURING COMPANY

"Arcwall" Coal Cutters

For "Overcutting" System of Mining

Machine with Drop Head Cutter for cutting near the bottom.



A rapid cutter for room or entry work. Suitable for rooms up to 20 feet in width; has cut 20 foot room in eight minutes. It will cut and remove dirt bands up to 8 inches.

Cutting out Bone or Binder by the "Arcwall" Machine greatly reduces picking of coal at tipple and assures cleaner coal from pit car to shipping car.

MINES MORE COAL

This coal cutter cuts 100 to 200 per cent. more coal than the unmounted machines because no time is lost in loading or unloading or in the transferring from place to place.

REDUCES MINING COST

Because of greater output. Less machines required. No time lost in loading or unloading—it acts as its own locomotive. No shifting on floor. No slack shoveler needed.

PRODUCES BETTER COAL

Slate Seams and Dirt Binders may be cut out and "gobbed." Produces more lump coal because light charges of powder may be used—the coal is not shattered so much.

SAFER AND EASIER WORKING CONDITIONS

Less powder required in shooting—protection to tender roofs. Less danger from blown out shots. Easier to employ men to operate machines because less manual labor is required.

Write for Bulletin No. 129-A giving full particulars about the "Coal Cutting Machine of the Hour."

Jeffrey Power Drills

(Patented)

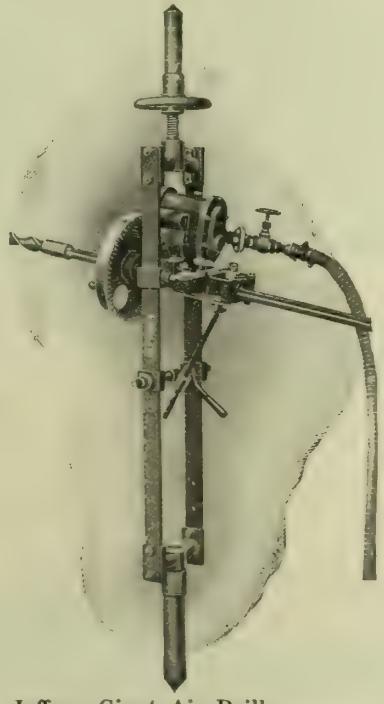
Made with either Electric, Air, Steam or Hand Power.

Write for Special Bulletin.



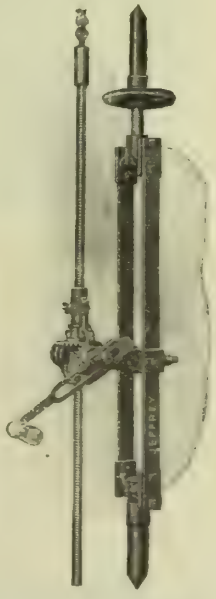
A-5-C Electric Power Drill

Carrier wheels at base of frame and on motor make it a "One man" portable drill; ratchet device affords an easy adjustment. Perfectly balanced, easily set in place, and of ample motor power to drill through any material against which the auger-bit will stand up under.



Jeffrey Giant Air Drill

For use in gassy mines or where air power is the only power obtainable.



Jeffrey Hand Drill

Designed to meet conditions where air power or electricity are unobtainable.

SULLIVAN MACHINERY COMPANY

122 So. Michigan Avenue, Chicago, U. S. A.

NEW YORK PITTSBURGH | HUNTINGTON KNOXVILLE | ST. LOUIS DENVER | SALT LAKE SPOKANE | LONDON SYDNEY, AUSTR.

Mine Your Coal with Sullivan IRONCLADS

Sullivan Ironclad Coal Cutters

are of two general types, Room and Pillar and Longwall. Room and Pillar Ironclads work on the continuous cutting principle, and their Sullivan predecessor was the pioneer "continuous cutting" machine.

Varieties of **Ironclads,** both longwall and room and pillar, include Direct Current Electric **Ironclads;** alternating current electric **Ironclads** and Turbinair **Ironclads** (with spiro turbine air Motor).

Distinctive **Ironclad** features that you should study, because of their bearing on the safe, rapid, economical production of large, clean coal are given below.



Ironclad on Self-Propelling Truck.

(1) Explosion proof electric Motors may be furnished on **Ironclads** for gassy mines. (Approved by Bureau of Mines.)

(2) **Ironclads** are reversible; that is, they are arranged to cut in either direction across the face.

(3) **Ironclads** are equipped with chain drive; safe, powerful, convenient.

(4) The drive mechanism is protected from breakage or undue strain by patented safety friction clutches.

(5) All motor and drive parts are protected from damage and the runner from injury by a tight armor plate housing.

(6) Cutter bars of any length up to 10 feet may be used on standard **Ironclads. Ironclads** have greatly increased the depth of mining with resulting economy and speed of production.

(7) **Ironclads** make a straight, clean cut at the bottom of the seam, leaving no ribs or sprags. This means light shooting; and clean coal and a large proportion of lump.

(8) **Ironclad** cuttings are coarse, being often sold as pea or small nut sizes.

(9) **Ironclads** are equipped with 30 H. P. Motors, and consume 12 to 20 H. P. while cutting and 4 H. P. while moving about the mine.

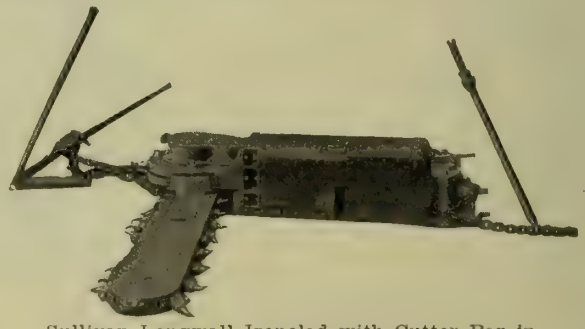


Ironclad in Position to Cut Across the Face Under Its Own Power.

(10) **Ironclads** perform all operations under their own power.

(11) In power consumption per ton mined, in repair cost, in rapidity of production, in ease of operation, in adaptability to conditions, **Ironclads** stand for highest efficiency among coal mining machines.

Bulletin 63 MD contains the details. Ask for it.



Sullivan Longwall Ironclad with Cutter Bar in Position to Move to Right, Along the Face.

Below: Ironclad for Alternating Current, Sumping Position.



Ask for These Catalogs

Sullivan Diamond Drills, Bulletin 65 AD.
Core Drilling by Contract, Booklet 113 D.
Sullivan Air Compressors, Booklet 115 D.
Sullivan Pick Coal Machines, Bulletin 57 D.
Sullivan Post Punchers, Bulletin 57 AD.
Sullivan Ventilating Fans, Bulletin 67 AD.
Sullivan Hoisting Engines, Bulletin 56 BD.
Sullivan Rock Drills, Bulletin 66 HD.
Sullivan Hammer Drills, Bulletin 66 LD.

INGERSOLL-RAND COMPANY

11 BROADWAY NEW YORK

Manufacturers of Compressed Air Coal Mining Machinery

"Jackhamers"

The "Jackhamer" is an automatically rotated hand drill using a twisted steel for boring coal and



an ordinary steel for rock, slate bands, etc.

It is the universal coal miner—used for mining coal, picking out bands, driving gangway, cutting hitches, sinking shafts, tunneling or stripping.

It is light in weight, self lubricating and rapid work. For special work it may be had with a column mounting and a Leyner water feed device.

Bulletin 4121 tells all about it.

"Ingersoll" Coal Punchers

It is an "all-round" puncher adapted to hard or



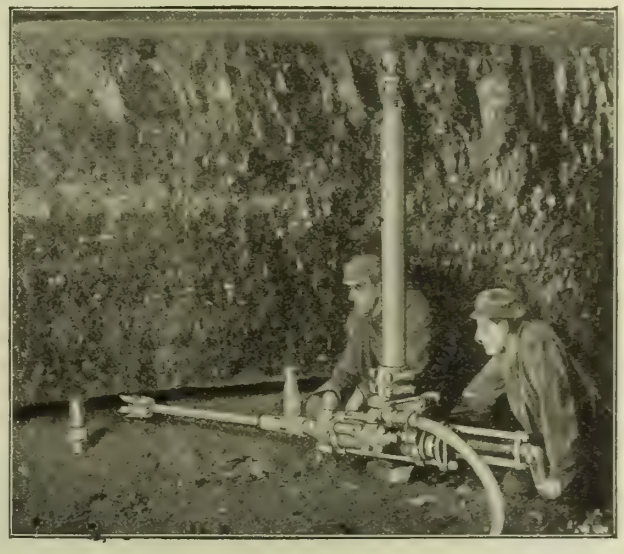
soft coal, thick or thin seams, high or low air pressures.

It is a safe machine,—it cannot "race" nor is there any deadly recoil. An automatic throttle cuts off the air when the pick misses and opens up again when cutting begins.

Bulletin 5002 tells why the "Inngersoll" strikes harder, does more work and costs little for repairs.

"Radialaxe" Coal Cutters

The Radialaxe is a compressed air operated machine, mounted on a column and possessing a num-



ber of exclusive features that peculiarly adapt it to the varying problems of the coal mining.

The Radialaxe may be used with equal success for either flat or pitching seams, pillar and stall or long-wall work, undercutting, overcutting, driving entries and cutting out dirt bands or shearing. It is also suitable for wedging down coal and for the work of an ordinary rock drill.

It has a large work capacity and is easy and safe to operate.

Let us send you Bulletin 5006 which describes the Radialaxe fully.

The Pneumelectric Machine Company

SYRACUSE, N Y.

Pneumelectric
TRADE MARK

Electric Coal Puncher

An electrically operated coal cutter of the puncher type, that has a power consumption of but 6 kilowatts at the machine when in operation. It consists essentially of an electric motor, a gear case and a cylinder which is so arranged as to carry two pistons, all these parts being assembled in a light, compact machine, as may be noted.

The motor through suitable gearing is connected to one of the pistons, and the other piston carries the coal pick; there being no mechanical connection between the two pistons. The motor driven piston compresses air, which air then acts on the other piston, causing it to produce a blow.

This principle makes possible the production of a blow by electric motor drive, without harm to the motor. At the same time the valuable characteristics of compressed air tools are retained, inasmuch as the blow is produced by air.

Uses and Advantages

The Pneumelectric Puncher, being light, easily handled, and requiring but a small amount of power, is especially useful for driving headings or narrow rooms, or in pillars or other places where it is necessary to timber close to the face. It is particularly recommended for use in conjunction with machines of the chain cutting type in which case the wide work is done by the chain machine and the narrow and pillar work by the Pneumelectric.

Specifications and Equipment

Pneumelectric Punchers can be furnished with motors wound for the standard mine voltages of direct current or for 2 or 3 phase, 60 cycle, alternating current power. The full equipment furnished with each machine consists of controlling devices, short connecting cable, long connecting cable on reel, tools, picks, running board, trestles, machine truck, extra parts, etc.

Installation and Expert Reports

Pneumelectric Punchers are installed in practically every coal producing state in United States as well as Foreign Countries.

Our representatives are capable of making expert reports on mine conditions with reference to the use of mining machinery. All communications will receive prompt attention.



FAIRMONT MINING MACHINERY CO.

Regular Equipment.

Tipple Structures
Screens and Chutes
Loading Booms
Picking Tables
Conveyors—all types
Cable Car Hauls
Chain Car Hauls

General Offices and Works
FAIRMONT, W. VA.

TRADE MARK REGISTERED FAIRMONT 20-101

(The Mark of Quality.)

Specialties

Steel Mine Ties
R. R. Car Retarders
Portable—
Electric Mine Pumps
Power Coal Augers
Box Car Loaders
Mine Car Trucks

COAL MINE EQUIPMENTS

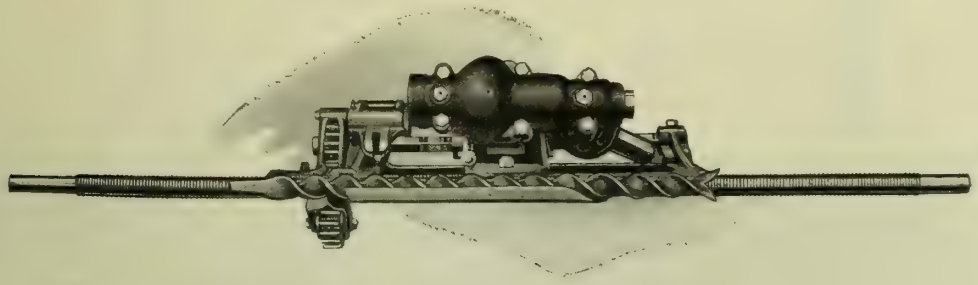
FAIRMONT Power Coal Auger

For Mounting on Chain under Cutting Machine of Jeffrey, Morgan-Gardner and Goodman make.

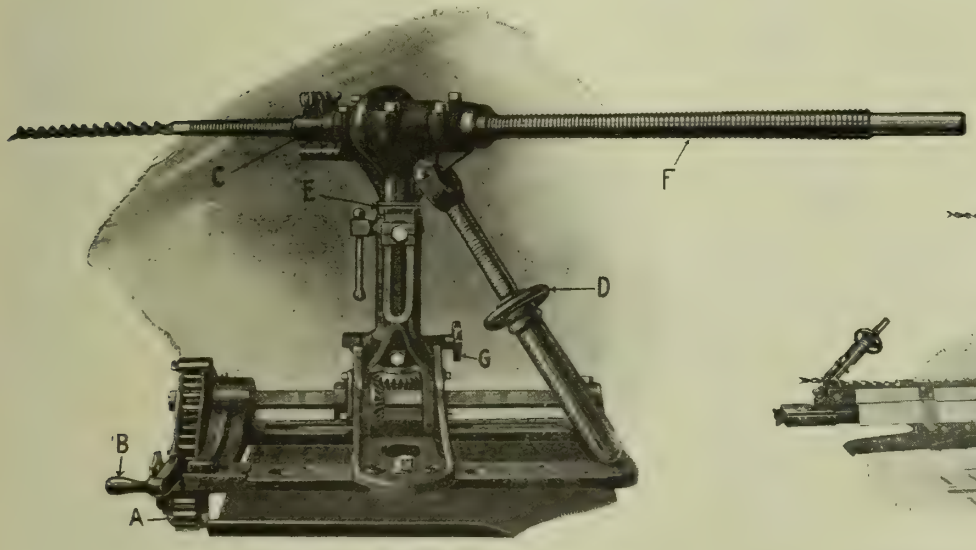
Let the machine runner do your drilling and increase the output of each machine by getting more coal for every cut.

When machine runner does drilling you can use cheaper labor for loaders.

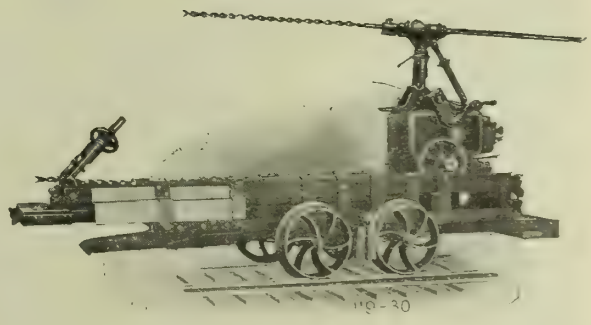
Drill holes straight or at any angle.



Showing how Auger lays flat on Machine for moving from room to room.



Auger complete unmounted.



Auger mounted on 17A Jeffrey Machine.

A—Pinion that connects with armature pinion of machine motor.

B—Lever for throwing machine in and out of gear.

C—Threaded Box for operating thread bar "F."

D—Wheel for adjusting Auger head to different angles.

E—Clamp ring for adjusting height of head.

F—Thread bar for turning bit which is inserted in end of bar.

G—Hand clamp for clamping head in any position desired.

IF YOU USE CHAIN MACHINES YOU CANNOT AFFORD TO BE WITHOUT IT.

Write for prices and Free Trial Offer.

The Fort Wayne Electric Works

of

GENERAL ELECTRIC COMPANY

Rock Drill Department — Madison, Wisconsin

The Fort Wayne Electric Rock Drill

Is in extensive and increasing use in the most progressive coal mines in the Pennsylvania, West Virginia, Kentucky and Ohio fields where it has been adopted as standard equipment after severe tests in competition with all known methods of drilling.

Is reducing the cost of rock work to a minimum.

Is making possible the economical mining of narrow seams.

Is operated from any standard trolley or lighting circuit.

Is proving indispensable for the following coal mining operations in hard rock:

Shaft sinking.

Taking down roof.

Passing through faults.

Upraising.

Rock entry.

Overcasting.

Air Course.

Ditching.

Descriptive bulletin on request.



Established 1878

TRADE MARK "REG. U.S. PAT. OFF."

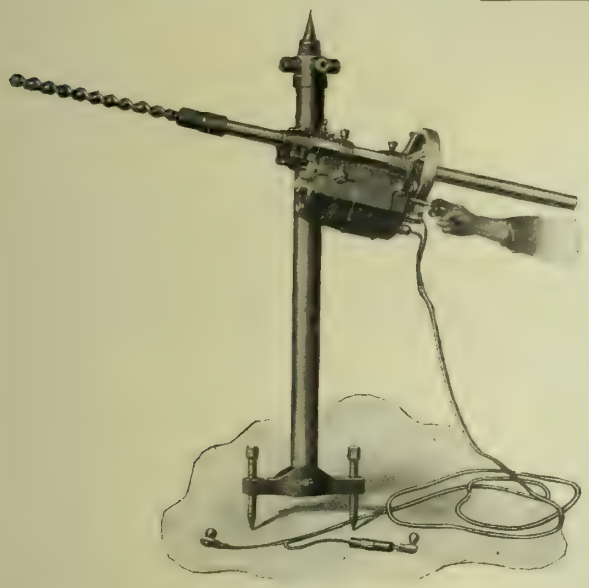
Howells Mining Drill Co.

Manufacturers of **Mining Machines** Of Every Known Description

Operated by Hand, Compressed Air or Electricity

Main Office and Works PLYMOUTH, PA., U. S. A.

TRADE MARK "REG. U S PAT. OFF"

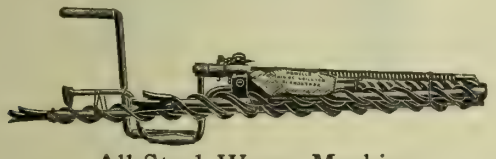


Spry Electric Drill.

The Spry Electric Drill is suitable for drilling coal, slate, shale and medium rocks. Made with either single or double column. Suitable for direct or alternating current from 110 to 500 volts. These machines are also made with back or compound gear for drilling hard material.

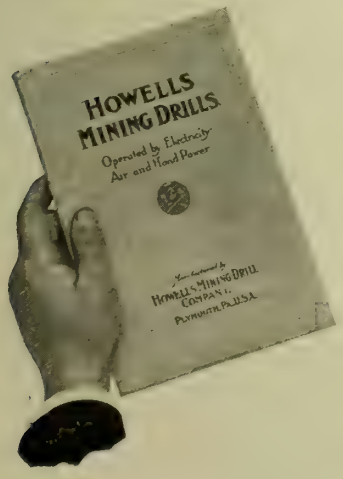
Fastest and Lightest Electric Drill on the Market.

Drills coal at the rate of 7 feet per minute, and medium rocks 3 to 4 feet per minute.



All-Steel Worm Machine

Is used by miners for drilling coal. slate and rock. Made in several different styles. Bores a perfectly straight hole whether it be wet or dry.



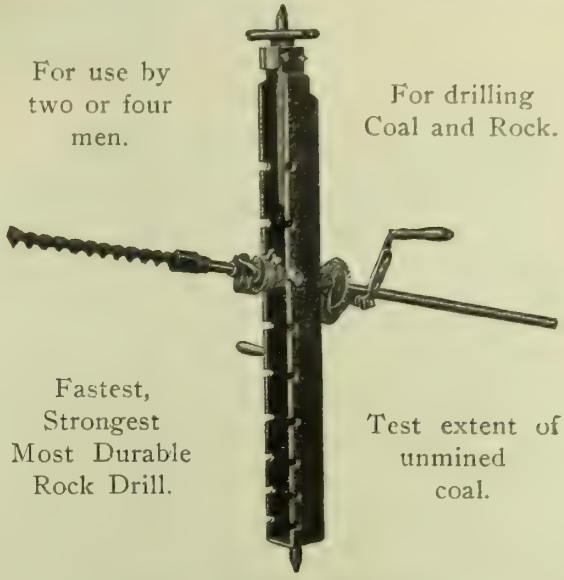
Ask for This Book It's Free.

Chock full of interesting up-to-date information you should have, if only for reference. It describes 45 different types of drills, each one made for a particular condition—to do the drilling at lowest cost. Electric, air and hand power drills.

Send for a copy today.

For use by two or four men.

For drilling Coal and Rock.



Fastest, Strongest Most Durable Rock Drill.

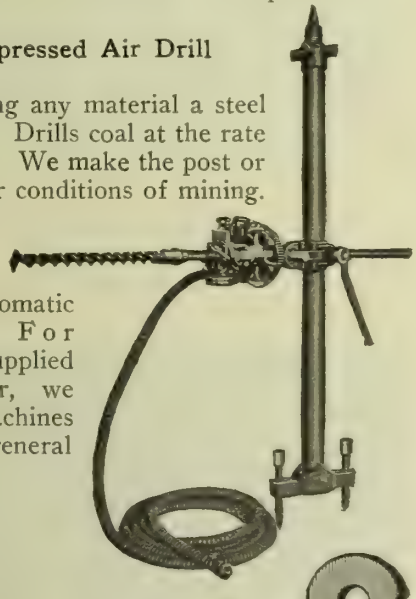
Test extent of unmined coal.

Heavy Geared Post Drill

The most powerful hand ball-bearing drill manufactured. Bores all kinds of coal, slate, shale, fireclay, medium rocks, sulphur, etc., in fact; any material a steel auger will penetrate. Frequently used in tapping old and new workings for coal, gas and water. Drills from 6 to 100 feet in depth.

Howell's Compressed Air Drill

Suitable for drilling any material a steel auger will penetrate. Drills coal at the rate of 7 feet per minute. We make the post or cross-bar to suit your conditions of mining. Cross-bar furnished where conditions demand it. Equipped with automatic ball-bearing feed. For mines that are supplied with compressed air, we recommend these machines for all kinds of general drilling.





"Howells" Non-Corrosive Centre Spads

Made of Brass, Copper and Steel.

Small, 1 ⅜" long.
Medium, 1 ¾" long.
Large, 2" long.

Send for Booklet and Samples.



The Pneumelectric Machine Company

SYRACUSE, N. Y

Pneumelectric
TRADE MARK

Electric Rock Drill

An electrically operated rock drill of the hammer type that has a power consumption of but 2.6 kilowatts, at the machine, when in operation.

It is capable of handling either hollow or solid steels and drilling either with or without water. The drill steel does not reciprocate but remains constantly in contact with the material being drilled. When hollow steels are used, water is forced through the steel by means of a small pump, thus removing the cuttings and eliminating dust. The solid steels are twisted to facilitate removal of the cuttings.

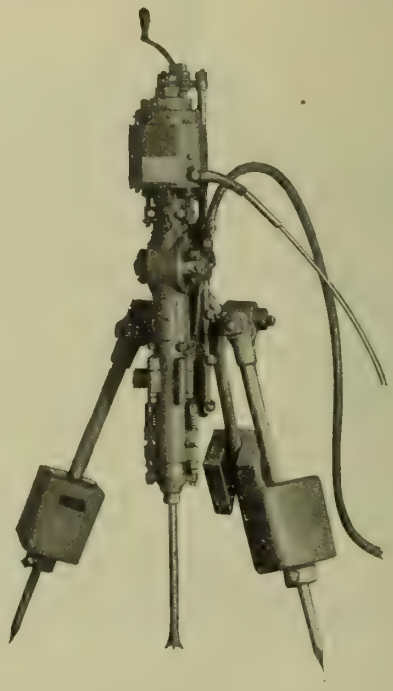
The great efficiency of this system of drilling is fully recognized and in the Pneumelectric, we offer a drill of the most efficient type capable of operating on electric power.

Uses and Advantages

The Pneumelectric Drill is well adapted to the work of drilling rock in or about coal mines and can be used on either a tripod or column.

It requires but a slight amount of power and can be operated from existing electric lines in a mine. It is light, can be handled in any practical height, and is self-contained.

An important use is in connection with coal stripping work, where the Pneumelectric is used to drill the rock overlaying the coal, also the coal



itself. Ability to use water in drilling is of especial importance in this work.



Specifications and Equipment

Pneumelectric drills can be furnished with motors wound for either direct or alternating current and are regularly equipped with either a column or tripod, long connecting cable on reel, tools, wrenches, steels, extra parts, etc.

Conclusion

If you have rock to drill, no matter what character it may be, the Pneumelectric can drill it satisfactorily in every way, providing you have electric wires near enough to furnish power. We are prepared to demonstrate this and ask your investigation.

Scranton Electric Construction Co.

Manufacturers of

The Scranton Drill

Office and Works SCRANTON, PA.

Products

The Scranton Rotary Drill is steel clad and practically weather proof with only two bearings to be lubricated.

The motor is rated 2 1-2 H. P. with 100 per cent overload capacity, wound for any direct current voltage, 110 and 250 volts standards.

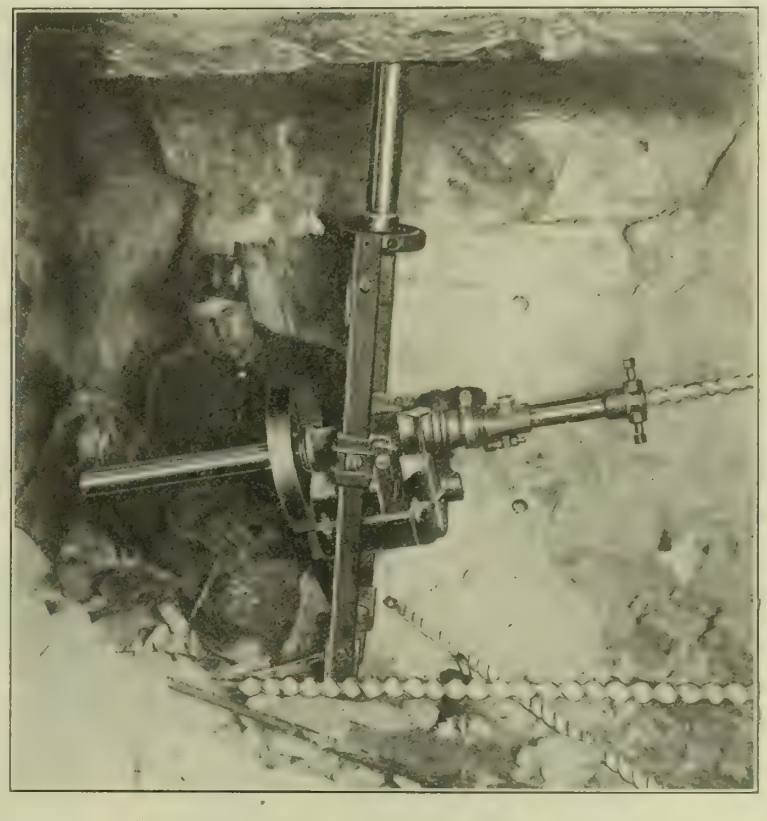
Drill body is of cast steel made in halves with pole pieces and hollow shaft bearings cast integral. These bearings are provided with removable oilless linings.

An internal machine-cut tobin bronze gear is used. This construction prevents accidents to operator and dirt accumulating in the teeth when resting on the ground.

The pinion is of carbon steel, oil treated.

The armature is so designed and proportioned that it gives maximum efficiency with minimum weight. The coils are wound in slots and the winding is so designed that under normal conditions of operation the heating is well within conservative limit, thus allowing a wide margin for heavy overload without injury or sparking.

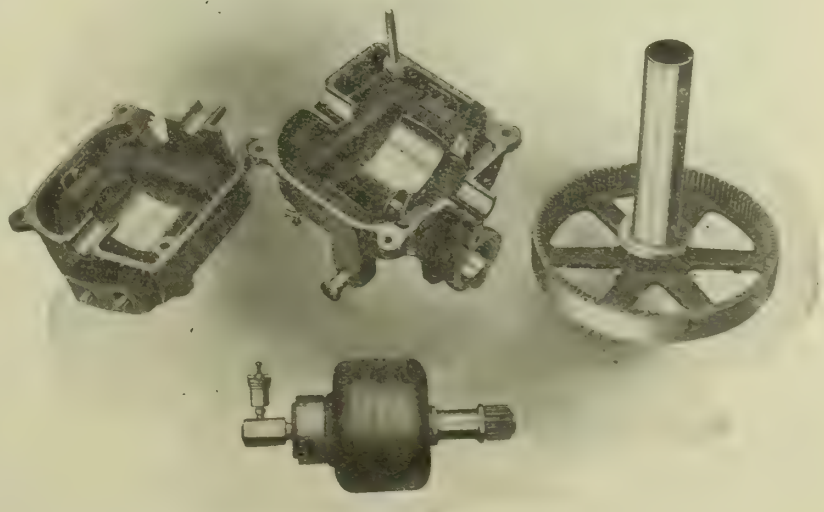
All parts are made to gauge and templet and are interchangeable.



Showing Scranton Drill in a Low Vein of Coal.

The Scranton Drill may be used with either single or double column, according to the mine conditions. The cables are connected to the drill by means of plug switches, either one of which may be used for controlling the motor. No resistance is required for starting.

The drills are furnished with 1 1-2 in. solid or two in. hollow feed bars with any thread from 5 to 14 as the local conditions may require. For salt and coal an 8 ft. auger passing through the center of a 5 ft. feed bar is used, the auger being held in place by means of set screws in a chuck. In harder substances solid feed bars and chucks are used, with augers of graded lengths; and for extreme cases double reduction gears are furnished.



Showing the simplicity of the Scranton Drill.

Buettner & Shelburne Machine Company, Inc.

Office and Works TERRE HAUTE IND.

Manufacturers of

Repair Parts for Coal Mining Machines

PRODUCTS

Cutter Heads, Cutter Chains, Blocks, Side Straps, Bit Set Screws, Chain Guides, Shafting, Bushings, Gears, Drive Sprockets, Rheostats, Series Coils, Field Coils, Commutators, Armature Rewinding, etc.

B. & S. Improved Cutter Heads

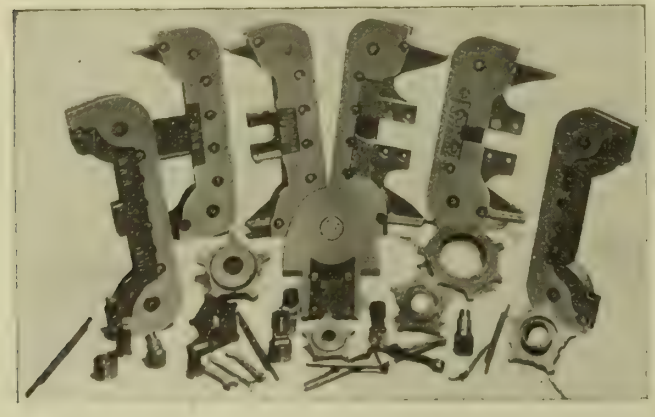
There are several points which are exclusive in our improved Cutter Heads, Patented and controlled by us.

The prime object of our invention is the provision for protecting bearing seats for the Idler Wheels employed in carrying the endless chain, which is provided with a plurality of cutting tools or bits, as in common.

Our Cutter Head is so constructed that the Idler Wheels mounted therein will have their bearings completely isolated or inclosed, whereby the wheels will always run in oil or in a perfectly lubricated condition, free from dust and grit, and consequently free from liability to become worn and deteriorated.

A felt washer is used for gasket over Idler Wheel and shoulder on Idler wheel stud. The top half of Cutter Head is fastened down on same so as to prevent dust and grit getting into oil cell.

The Cutter Head wearing bars are tool steel of proper size not to entirely fill the space between the top half and bottom half. The object in thus leaving a slight clearance between them is to compensate for expansion incident to the use of the machine, inasmuch as burrs or irregularities in the surface and edges thereof will be produced by chain traveling over same and cause the top half of Cutter Head to rise and allow dust and grit to get in oil cells of Idler Wheels.



The above illustration shows several of our Improved Cutter Heads adapted to various makes and types of mining machines. They are constructed to meet the varying conditions and are especially designed to withstand the heavy work required where the cutting is very hard. The cost of maintenance is materially decreased where our Improved Cutter Heads are installed. They are built for all types and makes of machines.

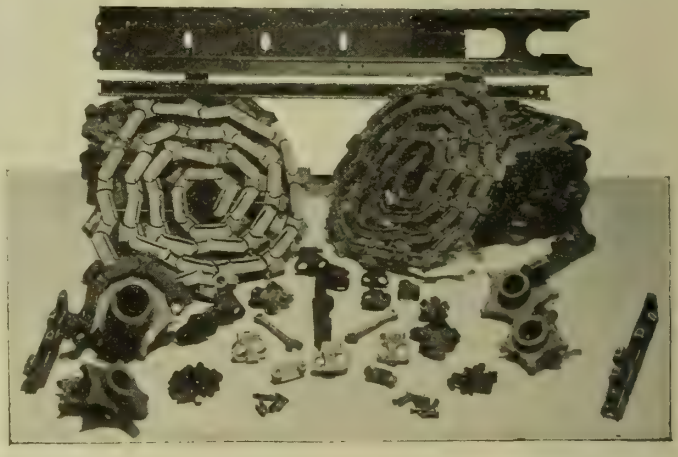
B. & S. Improved Cutter Chains

The most vital part of coal mining machines is the Cutter Chain, as the greatest strain is borne by the moving parts, and they are required to work in cuttings. The question of life at this point has been well considered.

The chain blocks which carry the cutters or bits are made of cast steel and so formed and proportioned that they are capable of withstanding the severe strain brought upon them.

The side straps are drop-forged of the best material, and put through our special tempering process to insure maximum life.

The life of the chains we manufacture exceeds that of any other yet used on this class of work.



All Cutter Chains moving in one direction will wear more on the rear hole of the Chain Block and the front boss of the Side Strap, than on the opposite holes. This is caused by being directly in front of the Drive Sprocket Tooth, which forces the Cutter Chain into motion, thereby causing a greater friction on same as the Sprocket Tooth bears against it. This is known as the tight end. However, after the Chain Block and Side Strap have passed the Drive Sprocket the loose end is formed. This is possible because the Chain Block is pushed instead of pulled.

Consequently the Cutter Chains for Mining Machines have been a serious problem and an expense to the machine owners. The Cutter Chains have been only half worn, or, in other words, the tight end was worn out, therefore the Chains have had to be discarded as they could not be used without endangering the machine, by either stripping the Chain Guides or doing other damage because of the irregularity of the openings

between the Chain Block ends (caused by the wearing of the tight end) which do not properly correspond to the spacing of the teeth on the Drive Sprocket and the Idler Sprocket in the Cutter Head.

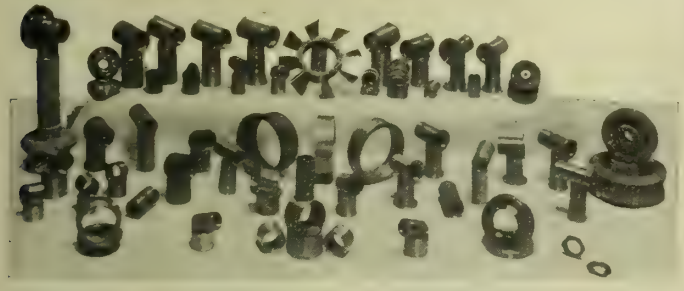


B. & S. Improved Equalizing Wearing "7" Position Cutter Chain.



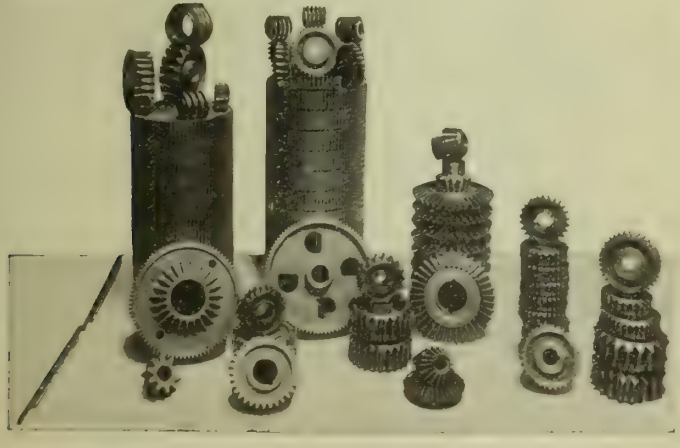
New Type and Old Type.

We have designed and are now manufacturing a Cutter Chain that will equalize the wearing of both holes of the Chain Block and also the bosses of the Side Strap, thereby producing a Cutter Chain that will stand more wear and tear than any other in the market at the present time. Furthermore, our New Improved Cutter Chain is built with half-inch rivets, so as to stand the severe usage. It is constructed of seven position Cutter Bits or Blocks, so as to proportionally distribute the cutting of each Cutter Bit, thereby releasing some of the strain on the machine and taking from 5 to 10 amperes less power.

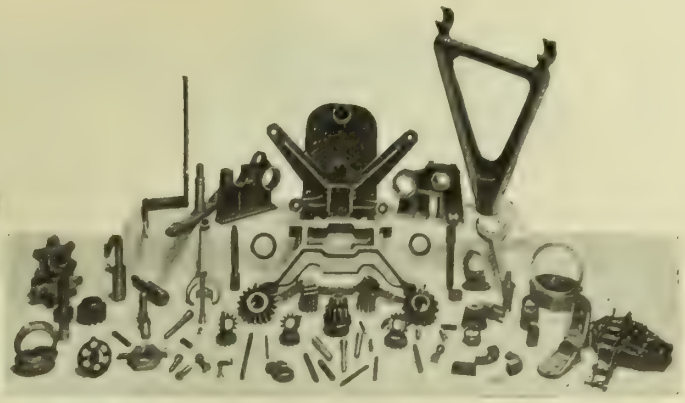


Bushings for Armatures, Drive, Feed and Clutch Shafts, Cutter Heads, Bottom and Side Frames, Trolley Wheels and Armature Hubs.

Gears and Sprockets



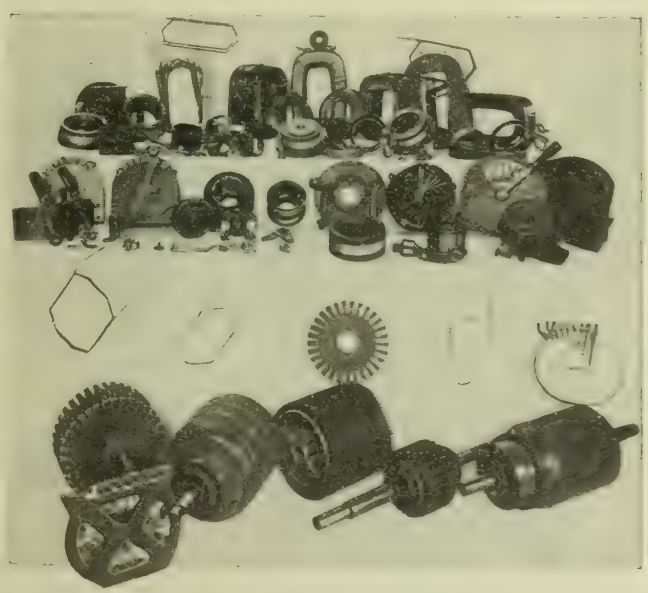
Feed, Drive, Worm, Bevel; Gears; Pinions and Worms.



Bottom Bearing Frames, Rear Jack Trusses, Side Brackets, Bevel Gears and Pinions, Front Jack Bolts, Lock Nuts, Propelling Chains, Wrenches, Tension Screws and Keys.



Armatures, Clutch, Drive, Feed and Worm Shafts, Rear and Front Jack Screws, Hand Wheels, Rear and Front Jack Pipes and Clevises.



Armatures Complete, Commutators Complete, Commutators Assembled, Mica Segments and Rings, Shunt and Series Coils, Switch Boards Complete, Rheostats; Reverse Switches, Insulating Friction Taps, Armature Coils, Contacts, Brush Holders, Carbon Brushes, etc.

Service

All our Supplies and Repair Parts are made of the best material.

Our employees are experts in their respective lines.

Having had many years of actual service in the mines we believe a practical knowledge of conditions often help a customer, and as far as possible we endeavor to give all orders our personal attention.

FRANK PROX COMPANY

TERRE HAUTE, IND.

"Everlasting Line"

Cutter Heads, Chains, Guides, Gibs, Etc.

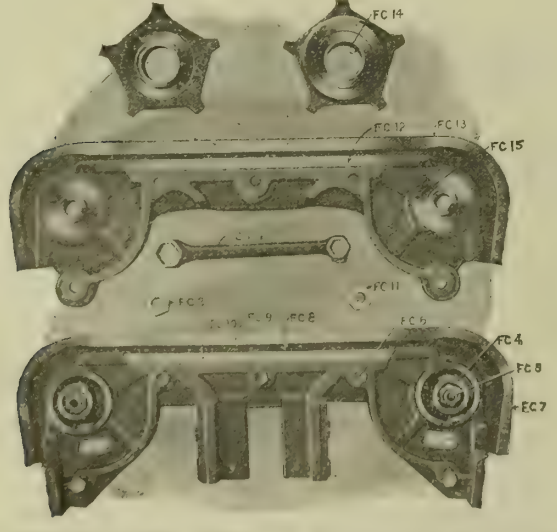
For All Makes of Breast, Short and Long Wall Mining Machines

Mr. Purchaser and General Manager:

Have you stopped to consider, when you throw away a cutter head, that not more than 3 per cent of its material has been worn away? But its vital features have been destroyed and the head has been rendered useless. This is not the case with our cutter head. When the parts carrying the chain have been worn away they can be replaced with new wearing strips which are drilled to fit the holes in the head exactly. It is only necessary to punch out the rivets and rivet on the new strips, which can be done by any blacksmith or mine electrician. The chain guiding elements are again renewed and the head is as good as new.

With a plant of 15 machines using a cutter head every 18 months, this part of the machines would cost $483.00 per year, not considering extra parts for repairs such as front bearings, sprockets and bushings. With a full equipment of our heads we could furnish the complete set of renewable wearing surface strips for about $12.00 per set, thus effecting a saving of $303.00 per year.

Our sprockets and bearings are also more durable than any other make on account of being made of superior material and provided with a perfect system of lubrication. The front stud, when worn on one side, can be turned around and worn on the opposite side, thus doubling its life. The first head will be sent on thirty days' approval.



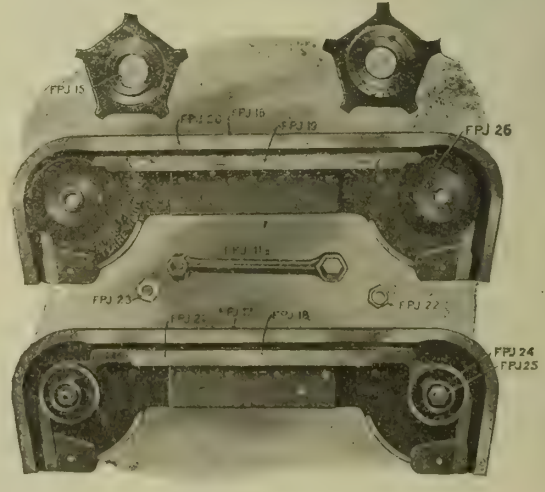
Prox Improved Cutter Head for H. D. & H. H. D. Morgan Gardner Machines.

Type P. C. 1-2 36" Cutter Head H. D. Center to Center of Sprockets 26½

Type P. C. 3½-4½ 38 Cutter Head H. D. Center to Center of Sprockets 28"

Type P. C. 81-82 32" Cutter Head H. D. Center to Center of Sprockets 23"

Type P. C. 65-66 39" Cutter Head H. H. D. Center to Center of Sprockets 27¾"



Prox Improved Cutter Head for "Jeffrey" Machines

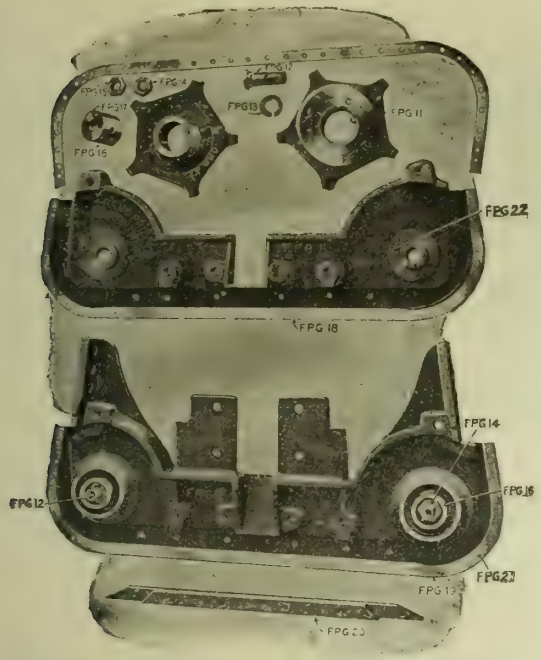
F. P. J. 13-14-19A 44 Cut No. 7 Chain.

F. P. J. 29-30-17A 44 Cut No. 7 Chain.

F. P. J. 31-32-17A 44 Cut No. 8 Chain.

F. P. J. 33-34-19A 39 Cut No. 7 Chain.

Send for Savings Account Booklet.



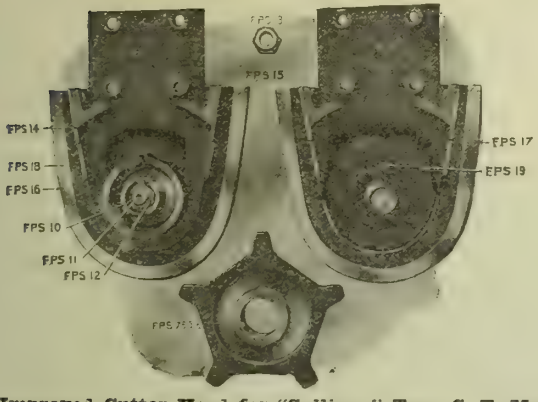
Prox Improved Cutter Head for Goodman Machines.

Type F. P. G. 1-2 42" Cut No. 7 and 10 Chain: Center to Centeer of Sprocket 26".

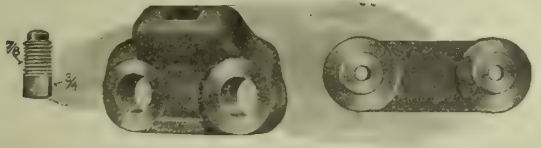
Type F. P. G. 3-4 44" Cut No. 7 and 10 Chain: Center to Centeer Sprocket 28".

Type F. P. G. 57-58 42" Cut No. 11 Chain: Center to Center of Sprocket 26¾".

Type F. P. G. 55-56 45" Cut No. 11 Chain: Center to Center Sprocket 29¾".



Prox Improved Cutter Head for "Sullivan" Type C. E. Machine.



Prox Chain for use on Sullivan Machine, 7 Position Type C. E. Reinforced. Hardened Wearing Surfaces.

Made Extra Strong.
5 Foot Under Cut 28 Block.
6 Foot Under Cut 33 Block.



Chain for use on Morgan-Gardner Machine, Type H. D. Reinforcel. Hardened Wearing Surfaces.

"Heavy Duty" Chains to do the work must be strong. We have added to the metal of the block and side strap of this chain where needed. The operator using them never had a kick.

Made for H. D., H. H. D. and Short Wall Machines, Square and Keystone Bits.



Prox Chain for use on Jeffrey Machine Nos. 17 and 19A, Type 7. Reinforced. Hardened Weaering Surfaces

This Chain is made up with the greatest care and out of the best material. The block has been reinforced (see cut) and the side strap is our trussed pattern. You can't beat it.

Made in No. 7B, No. 7C, No. 8 and Short Wall Machine.



Chains for use on Goodman Machines for Type E. Reinforced. Hardened Wearing Surfaces.

This Chain, like the others we turn out, has had special attention of our engineers and has been built up until it has now reached a degree of perfection that we never have complaints on it. Every user is a booster.

Goodman No. 7 and 10 Chain.
Goodman No. 11 Chain.
Goodman No. 12 Chain.

Guides and Gibs

We make Chain Guides for H. D. and H. H. D. Morgan-Gardner and Goodman make of machines with hardened removable wearing surfaces, and Extra Heavy Gibs for Sullivan short wall machines with hardened steel wearing surfaces. The kind that won't open up.

BERTRAND P. TRACY

32nd Street and Penn Avenue, Pittsburgh, Pa

Manufacturer and Dealer In

Repair Parts for Coal Cutting Machines and Mine Locomotives

Supplies and Materials for Electrically Operated Coal Mines

PRODUCTS

For Machines

Shafts, Gears, Pinions,
Worms and Worm Gears,
Bronze and Graphite Bushings,
Cutter Heads, Chain Guides,
Brackets, Sprockets, Clutches
Commutators, Rheostats,
Chain Set Screws,
Studs, Screws, Bolts and Nuts,
Bits and Bit Steel,
Lifting Jacks, Oilers, Shovels,
Wrenches, Carbon Brushes,
Electric Cable, Steel Cable,
Winch Rope, Etc.

For Locomotives

Steel Tires, Steel Gears,
Armature Pinions (Oil Tempered)
Armature Shafts,
Armature Shaft Bearings,
Axles,
Axle Bearings,
Commutators,
Carbon Brushes,
Trolley Wheels, Poles and Harps,
Arc Head-lights.

For the Repair Shop

Armature Coils,
Commutators,
Insulating Materials,
Mica and Mica Products
Asbestos Materials,
Insulating Tape—All kinds,
Sleeving, Twine,
Insulating Varnish, Shellac,
Babbitt Metal, Solder, Salts
Hard Fibre,
Shop Tools of every kind.

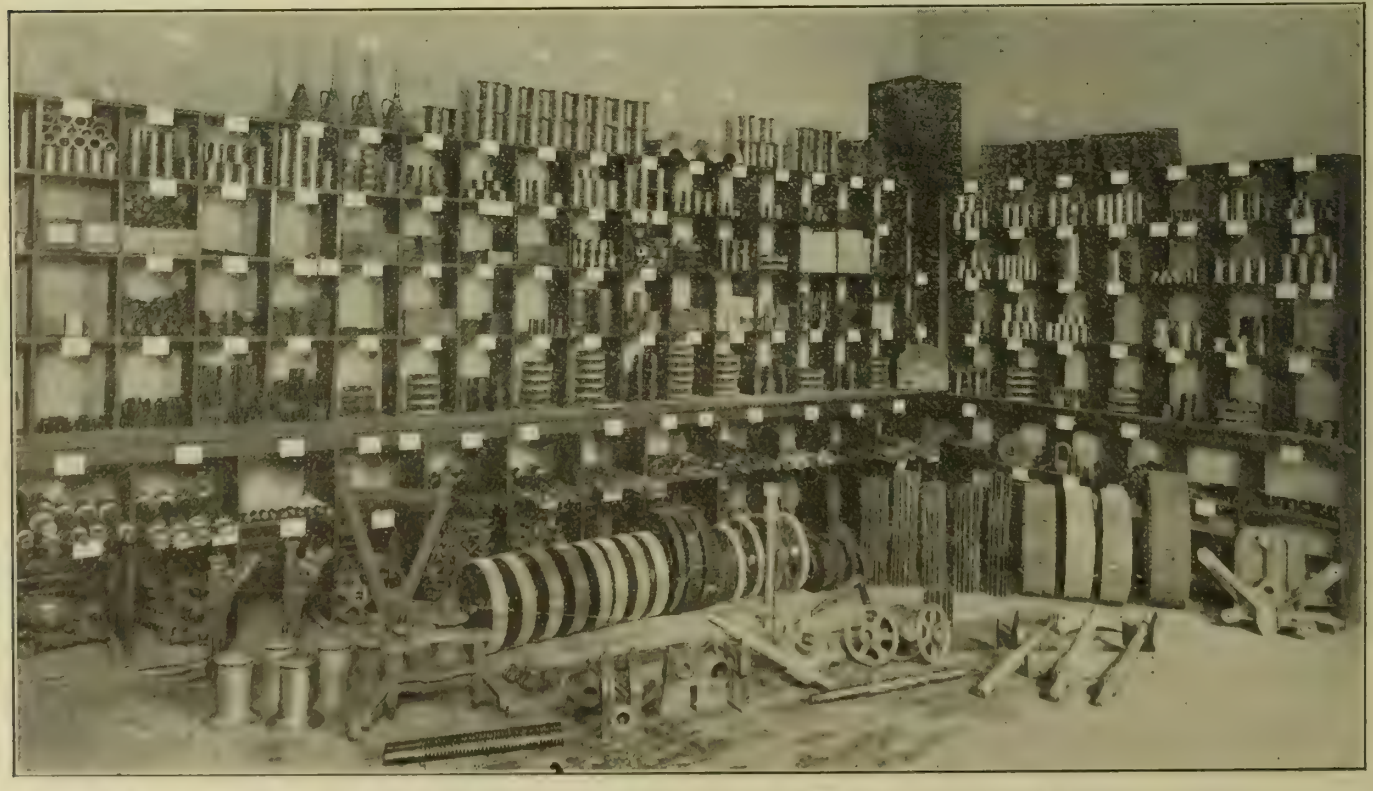
Sundries

Ammeters, Voltmeters,
Starters, Rheostats,
Circuit Breakers,
Switches, Magnetos,
Fault Finders,
Lighting Supplies,
Line Material,
Rail Drills.

SERVICE

"The Paramount Consideration"

Our knowledge of requirements, facilities and location enable us to guarantee a service that is correct in every detail. Correspondence solicited. Catalog on request.



A corner in our stock room showing a portion of over 4,000 items, we carry in stock, insuring prompt deliveries.



ELECTRICAL SECTION

Engineering Data

Bonding—Electrical Properties of Mine Tracks.
Wiring Formulae.
Ohm's Law.
Alternating Current Formulae.
Equivalent of Electrical Units.
Current for Motors.
H. P. Formulae for Steam Engines.
Carrying Capacity of Interior Conductors.
Metric System of Weights and Measures.
Conversion Table—Kilowatts and Horse Power.
Speed and Frequency Table for A. C. Apparatus.
Formulae for Transmission Line Calculations.
Constants for Transmission Line Calculations.
Volts Lost with various Copper Wire Combinations.
Volts Drop in Bonded Track.
Properties of Stranded Copper and Aluminum Cable.
Breaking Strain of Copper and Aluminum Cable.
Resistance of Copper Cable.
Weight of Bare Copper Wire.
Diameter and Weights of Insulated Wire and Cable.

The following manufacturers have catalogue descriptions in this section:

American Steel & Wire Co.
Cincinnati Elec. Repair Co.
Cleveland Armature Works.
Condit Electrical Mfg. Co.
Doubleday-Hill Elec. Co.
Dudley Elec. & Mch. Co.
Electric Railway Equipment Co.
Electric Service Supplies Co.
Fairbanks, Morse & Co.
Flood City Mfg. Co.
Garton, W. R., Co.
General Electric Co.
Iron City Electric Co.
Le Valley-Vitae Carbon Brush Co.
Monarch Refillable Fuse Co.
Peerless Electric Co.
Roebling's John A., Sons Co.
Sackett Mine Supply Co.
Standard Underground Cable Co.
Stromberg-Carlson Telephone Mfg. Co.
Sullivan, G. W., & Co.
Union Electric Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.

For additional descriptions of Electrical Equipment, not appearing in this section, refer to Index of Products in front of book.

Inquiry Data for
Electric Motors.

a. Voltage.

b. Direct or alternating current. If latter, single, two or three phase and number of cycles per second. If direct current, shunt or compound wound.

c. Is motor to be directly coupled, back geared, or belted? Maximum speed of motor. Any idler equipment.

d. Controllers:

d-1 Any automatic control.

d-2 Any remote control.

e. Are motors open or enclosed or semi-enclosed types?

CURRENT FOR MOTORS.
Amperes for Each Lead at Full Load.

HORSE POWER.	DIRECT CURRENT.		ALTERNATING CURRENT.		
			PHASE		
			Single	Two	Three
	VOLTS		VOLTS		
	110	220	208	200	200
½	4.9	2.5	4.9	...	...
1	9	4.5	7.8	...	...
1½	13.6	6.8	...	...	...
2	18	9	15.9	...	...
3	25	13	21.5	...	...
5	42	21	32.5	12.9	14.9
7½	57	28	48	19	22
10	75	38	68	25	29
15	113	57	90	37	43
20	150	75	115	49	58
30	226	113	161	72	84
40	301	150	...	96	111
50	376	188	...	118	136
60	452	226	...	140	163
70	527	263	...	163	187
80	602	301	...	185	213
90	678	339	...	207	239
100	753	376	...	230	265

WIRING FORMULÆ.

$CM = \frac{22 \times LC}{V}$ Where load is at end of line.

$CM = \frac{11 \times LXC}{V}$ Where load is distributed along line.

CM = Circular mils.
L = Length in feet on one side of circuit.
C = Current in Amperes.
V = Loss in volts.

Equivalents of Electrical Units.

1 Kilowatt = 1000 Watts.
1 Kilowatt = 1.34 Horse power.
1 Kilowatt = 42257 Ft.-lbs. per min.
1 Kilowatt = 56.87 B. T. U. per min.
1 Horse power = 746 Watts.
1 Horse power = 33000 Ft.-lbs. per min.
1 Horse power = 42.41 B. T. U. per min.
1 B. T. U. = 778 Foot pounds.
1 B. T. U. = 0.2929 Watt hours.

CARRYING CAPACITY OF INTERIOR CONDUCTORS

The question of drop is not taken into consideration in these tables.

The following table shows the allowable carrying capacity of wires and cables of 98 per cent. conductivity.

The lower limit is specified for rubber covered wires to prevent gradual deterioration of the insulation by the heat of the wires, but not from fear of igniting the insulation.—"N. B. of F. U."

Copper B. & S. Gauge.	Concealed Rubber-Covered Wires.	Exposed Weatherproof Wires.
	Amperes.	Amperes.
18	3	5
16	6	8
14	12	16
12	17	23
10	24	32
8	33	46
6	46	65
5	54	77
4	65	92
3	76	110
2	90	131
1	107	156
0	127	185
00	150	220
000	177	262
0000	210	312
Circular Mils.		
200,000	200	300
300,000	270	400
400,000	330	500
500,000	390	590
600,000	450	680
700,000	500	760
800,000	550	840
900,000	600	920
1,000,000	650	1,000
1,100,000	690	1,080
1,200,000	730	1,150
1,300,000	770	1,220
1,400,000	810	1,290
1,500,000	850	1,360
1,600,000	890	1,430
1,700,000	930	1,490
1,800,000	970	1,550
1,900,000	1,010	1,610
2,000,000	1,050	1,670

(Courtesy Hazard Manufacturing Company.)

OHMS LAW.

$C = \frac{E}{R}$ $R = \frac{E}{C}$ $E = CR$

$W = EC = C^2R = \frac{E^2}{R}$

$H.P. = \frac{EC}{746} = \frac{C^2R}{746} = \frac{E^2}{R \times 746} = \frac{W}{746}$

E = Electromotiv force in volts.
R = Resistance in Ohms.
C = Current in Amperes.
W = Power in Watts.
H. P. = Horse-power.

Courtesy Randolph-Means Co.

Alternating Current Formulae.

$C = \frac{W}{E \times P.F.}$ For single phase.

$C = 0.50 \times \frac{W}{E \times P.F}$ For two phase.

$C = 0.58 \times \frac{W}{E \times P.F}$ For three phase.

C = Current in line in Amperes.
W = Energy delivered in Watts.
E = Volts between mains.
P. F. = Power Factor. When power factor cannot be accurately determined it may be assumed as follows: Lighting load only .95; lighting load and motors .85; motors only .80.

BONDING

The Electrical Properties of Mine Tracks

The Electrical Resistance of any railway track depends on the material the rails are rolled from, and on the bonding of the joints.

The material is usually steel. The percentage of carbon present has a great influence on the electrical conductivity of the material. With high carbon, the resistance is sometimes as high as 13 times the resistance of copper of the same cross-section, while in some special grades of steel made for rolling into what is called the "Third Rail" on Electrical Railroads, the resistance is as low as 7 to 7½ times the copper. For mining work the common sizes are 20 to 50 lbs. per yard, in these and smaller sizes the ratio of conductivity is about 11. All calculations and data published in the following table are based on this conductivity.

The Bonding of mine tracks is as a rule very poorly done. It is difficult to provide a reliable bond for rails less than 50 lbs. per yard, because the web is of such dimensions that there is no room under the fish plates for concealing the bond and an "open bond" is always subject to injury. When a "concealed" is possible, it should be used by all means. It is poor policy to neglect the bonds after they have been installed, because the track when properly connected offers such an efficient and economical means for returning the current back to the power house. Roughly speaking, it costs only one-seventh (1-7) as much to bond a single track road, as it costs to install a copper feeder of equal capacity. The cost of maintenance is not always in favor of copper feeder. Where the top is poor and full of "drawslate" it is cheaper to keep up the bonded track.

The best kind of bond is the "All Copper Bond" with good size terminals pressed into reamed holes. The laminated or stranded bond is preferable when it can be concealed under the fishplate. When it is necessary to span the fishplates the solid wire compressed terminal bond should be used.

Cross bonding is another thing which is so often neglected. Good practice stipulates cross bonding every 200 feet.

The table following is calculated for mine tracks (single track of two rails), in which the rails are properly bonded, and the two sides cross bonded every 200 feet. The rails are mechanically connected by regular double fishplates and bolts. The length of rails is taken as 30 ft. and the resistance of each bond considered equal to 4½ ft. of rail resistance. (The Standard Electric Railway practice condemns a rail bond, which is more than 3 ft. of rail resistance.) The formulae provide, for the bond resistance and solve directly for the track and not for steel rails only, which is usually the case in textbooks and catalogues.

The resistance of the track is based on the formulae:

$\frac{A}{W}$ x .2189 x 1.15 equals Ohms per mile.

and the copper equivalent in Cir. Mils, on the formula:

$\frac{W}{A \text{ x } 1.15}$ x 253000 equals C. M. of copper.

in which A equals 11 (Ratio of steel to copper resistance) and W equals Weight of rail in lbs. per yd.

Electrical Properties of Mine Tracks

Weights of Rail per yd.	Equivalent Area in Cir. Mils of Copper	Resistance at 24°C.		Loss in Volts per Amp. in 100 ft. Track	Safe Amp. 10°C. Rise.
		Ohms per	Ohms per 1000 ft.		
16	320000	.1737	.0329	.0033	500
20	400000	.1684	.0263	.0026	600
25	500000	.1109	.0210	.0021	675
30	600000	.0924	.0175	.0017	750
35	700000	.0792	.0150	.0015	850
40	800000	.0692	.0131	.0013	950
45	900000	.0616	.0117	.0012	1050
50	1000000	.0554	.0105	.0011	1150
55	1100000	.0504	.0095	.0010	1250
60	1200000	.0464	.0088	.0009	1300
65	1300000	.0417	.0079	.0008	1400
70	1400000	.0396	.0075	.00075	1500
80	1600000	.0345	.0065	.00065	1700
90	1800000	.0307	.0058	.00058	1900
100	2000000	.0270	.0051	.00051	2150

Calculated by Alex. Palmros Dec. '07.

Kilowatts and Horsepower

0.746 Kilowatts = 1 Horsepower

Kilowatts to Horsepower				Horsepower to Kilowatts			
Kw.	Horsepower	Kw.	Horsepower	Hp.	Kilowatts	Hp.	Kilowatts
1	1.341	55	73.733	1	.746	55	41.03
2	2.681	60	80.436	2	1.492	60	44.76
3	4.022	65	87.139	3	2.238	65	48.49
4	5.363	70	93.842	4	2.984	70	52.22
5	6.703	75	100.545	5	3.730	75	55.95
6	8.044	80	107.248	6	4.476	80	59.68
7	9.384	85	113.951	7	5.222	85	63.41
8	10.725	90	120.654	8	5.968	90	67.14
9	12.065	95	127.357	9	6.714	95	70.87
10	13.406	100	134.048	10	7.460	100	74.60
11	14.747	110	147.47	11	8.206	110	82.06
12	16.087	120	160.87	12	8.952	120	89.52
13	17.428	130	174.28	13	9.698	130	96.98
14	18.768	140	187.68	14	10.444	140	104.44
15	20.109	150	201.09	15	11.190	150	111.90
16	21.450	160	214.50	16	11.936	160	119.36
17	22.790	170	227.90	17	12.682	170	126.82
18	24.131	180	241.31	18	13.428	180	134.28
19	25.471	190	254.71	19	14.174	190	141.74
20	26.812	200	268.12	20	14.920	200	149.20
22	29.493	220	294.93	22	16.412	220	164.12
24	32.174	240	321.74	24	17.904	240	179.04
26	34.856	260	348.56	26	19.396	260	193.96
28	37.537	280	375.37	28	20.888	280	208.88
30	40.218	300	402.18	30	22.380	300	223.80
32	42.899	325	435.69	32	23.872	325	242.45
34	45.580	350	469.21	34	25.364	350	261.1
36	48.261	400	536.24	36	26.856	400	298.4
38	50.943	450	603.27	38	28.348	450	335.7
40	53.624	500	670.30	40	29.840	500	373.0
42	56.305	600	804.36	42	31.332	600	447.6
44	58.986	700	938.42	44	32.824	700	522.2
46	61.667	800	1072.48	46	34.316	800	596.8
48	64.349	900	1206.54	48	35.808	900	671.4
50	67.030	1000	1340.60	50	37.300	1000	746.0

Courtesy Goodman Mfg. Co.

Speed and Frequency Table

For A. C. Apparatus

Frequency	125 Cycles	60 Cycles	50 Cycles	40 Cycles	30 Cycles	25 Cycles
Alt. per Min.	15000	7200	6000	4800	3600	3000
POLES	SPEED					
2	7500	3600	3000	2400	1800	1500
4	3750	1800	1500	1200	900	750
6	2500	1200	1000	800	600	500
8	1875	900	750	600	450	375
10	1500	720	600	480	360	300
12	1250	600	500	400	300	250
14	1071	514	428	343	257	214
16	937½	450	375	300	225	187½
18	833⅓	400	333	266	200	167
20	750	360	300	240	180	150
22	682	327	273	218	164	136
24	625	300	250	200	150	125
26	577	277	231	185	138	115
28	536	257	214	173	129	107
30	500	240	200	160	120	100
32	469	225	187	150	113	94
34	441	212	177	141	106	88½
36	417	200	167	133	100	83½
38	395	189½	158	126	95	79
40	375	180	150	120	90	75
42	357	171	143	114	86	
44	341	163⅓	136	109	82	
46	326	156½	130	104	78	
48	312½	150	125	100		
50	300	144	120	96		
52	288	138½	115	92½		
54	277½	133⅓	111	88		
56	268	128½	107	86		
58	258½	124	103	83		
60	250	120	100	80		
62	242	116	97			
64	234½	112½	94			
66	227	109	91			
68	220½	106	88½			
70	214	103	86			
72	208½	100	83			
74	202½	97½	81			
76	197½	95				
78	192	92½				
80	187½	90				
82	183	88				
84	178½	86				
86	174½	84				
88	170½	82				
90	166⅔	80				
92	163	78				
94	159½	76½				
96	156	75				
98	153					
100	150					

Courtesy Crocker-Wheeler Co.

Tables

Metric System of Weights and Measures

Measures of Lengths

1 Millimeter	=	0.001	Meter	= 0.0394 Inch.
1 Centimeter	=	0.01	Meter	= 0.3937 Inch.
1 Decimeter	=	0.1	Meter	= 3.937 Inches.
1 Meter	=	1.	Meter	= 39.37 Inches.
1 Dekameter	=	10.	Meters	= 393.7 Inches.
1 Hectometer	=	100.	Meters	= 328 Feet, 1 Inch.
1 Kilometer	=	1000.	Meters	= 3280 Feet, 10 Inches.
1 Myriameter	=	10000.	Meters	= 6.2137 Miles.

It will be noticed that 10 Millimeters equal 1 Centimeter, 10 Centimeters equal 1 Decimeter, and so on.

Measures of Volumes

1 Milliliter	=	0.001	Liter	= 0.061 Cubic Inch.
1 Centiliter	=	0.01	Liter	= 0.6102 Cubic Inch.
1 Deciliter	=	0.1	Liter	= 6.1022 Cubic Inches.
1 Liter	=	1.	Liter	= 0.9081 Quart.
1 Dekaliter	=	10.	Liters	= 9.081 Quarts.
1 Hectoliter	=	100.	Liters	= 2 Bushels, 3.35 Pecks.
1 Kiloliter	=	1000.	Liters	= 1.308 Cubic Yards.

Weights

1 Milligramme	=	0.001	Gramme	= 0.0154 Grain.
1 Centigramme	=	0.01	Gramme	= 0.1543 Grain.
1 Decigramme	=	0.1	Gramme	= 1.5432 Grains.
1 Gramme	=	1.	Gramme	= 15.432 Grains.
1 Dekagramme	=	10	Grammes	= 0.3527 Ounce.
1 Hectogramme	=	100.	Grammes	= 3.5274 Ounces.
1 Kilogramme	=	1000.	Grammes	= 2.2046 Pounds.
1 Myriagramme	=	10000.	Grammes	= 22.046 Pounds.

Metric and English Equivalents

Inches = Millimeters ÷ 25.4	Lbs. Avoirdupois = Kilogrammes x 2.20462	
Feet = Meters x 3.28083	Tons (2000 lbs.) = Kilogrammes ÷ 907.18	
Yards = Meters x 1.09361	Lbs. per Foot = Kilo. per Meter x .67196	
Miles = Kilometers ÷ 1.60935	Lbs. per Cu. Ft. = Kilo. per Cu. Meter x .06243	
Sq. In. = Square Millimeters x .00155	Sq. Millimeters = Square Inches x 645.137	
Sq. Ft. = Square Meters x 10.7641	Sq. Meter = Square Feet x .0929	
Acres = Square Kilometers x 247.114	Grammes = Ounces x 28.3495	
Cu. In. = Cubic Centimeters ÷ 16.3870	Grammes = Pounds x 453.5926	
Cu. Ft. = Cubic Meters x 35.3140	Kilogrammes = Pounds x .45359	

Volts Lost with Various Copper Wire Combinations

Sizes of Wires	Area, Circular Mils.	Weight of Combination, Pounds per 1000 feet	Volts Lost per Ampere per 1000 feet
One No. 0000 and One No. 000	379405	1149	0 027
" " " " " 00	344679	1044	030
" " " " " 0	317192	960	.033
" " " " " 1	295295	894	035
One No. 0000 and Two No. 000	547210	1657	019
" " " " " 00	477758	1447	022
" " " " " 0	422784	1280	.025
" " " " " 1	378990	1148	027
One No. 000 and One No. 00	300884	911	035
" " " " " 0	.273397	828	.038
" " " " " 1	251500	762	041
One No. 000 and Two No. 00	433963	1314	024
" " " " " 0	378989	1147	.027
" " " " " 1	335195	1015	.031
One No. 00 and One No. 0	238671	723	.043
" " " " " 1	216774	656	.048
One No. 00 and Two No. 0	344263	1042	.030
" " " " " " 1	300469	910	.035
One No. 0 and One No. 1	189287	573	.055
One No. 0 and Two No. 1	272982	827	.038

Volts Drop in Bonded Track

Losses Per Ampere per 1,000 Feet of Single Track

Rail Bonds of No. 1 Copper Wire

Weight of Rail, Pounds per Yard	Length of Bond, Feet	Volts Drop per Ampere per 1000 feet of Single Track			
		30-Ft. Rail Lengths		20-Ft. Rail Lengths	
		Single Bonded	Double Bonded	Single Bonded	Double Bonded
8	2½	0 0344	0 0318	0 0354	0.0317
12	2½	.0247	.0221	0261	0224
16	2½	0198	.0172	0214	0176
20	2½	.0168	.0142	.0188	0149
25	2½	.0145	.0119	.0166	.0126
30	2½	0139	.0108	.0165	.0120
35	3	.0128	0097	.0155	.0109
40	3	0120	.0089	0148	.0101
45	3	.0114	.0083	.0142	.0096
50	3	.0109	.0078	.0137	.0090
55	3	.0104	.0073	0133	.0086
60	3	.0101	.0070	.0129	.0083
65	3	.0098	.0067	.0126	.0080
70	3	.0095	.0064	.0124	.0077

Formulas for Transmission Line Calculations

These formulas, and the tables of Constants on the following page are based upon a spacing of 18 inches for the wires, and results are sufficiently accurate for practical purposes with wires approximately that distance apart. Capacity has been neglected.

ALTERNATING CURRENT:

Area of conductor, circular mils $= \frac{D \times W \times K}{P \times E^2}$

Current in each conductor, amperes $= \frac{W \times T}{E}$

Loss in lines, volts $= \frac{P \times E \times M}{100}$

Weight of Copper, pounds $= \frac{D^2 \times W \times K \times A}{P \times E^2 \times 1{,}000{,}000}$

Wherein:

A =Constant (See table, opposite page)
D =Distance of transmission, one way, in feet.
E =Voltage between main conductors at receiving or consumer's end of circuit.
K For any power factor =2160 divided by the square of that power factor, for single phase.
=2160 divided by twice the square of that power factor, for 2-phase, 4-wire and 3-phase, 3-wire.
M =Constant (See table, next page).
P =Loss in line, in percentage of power (W) delivered to consumer.
T =Constant (See table, opposite page)
W =Total watts delivered to consumer.

Power factors for balanced circuits—

Single phase: $\frac{\text{Actual watts delivered.}}{\text{Volts} \times \text{Amperes}}$

2-phase, 4-wire: $\frac{\text{Actual Watts, Total.}}{2 \times \text{Volts} \times \text{Amperes (per phase)}}$

3-phase, 3-wire: $\frac{\text{Actual Watts, Total.}}{1.73 \text{ Volts} \times \text{Amperes (per phase)}}$

FOR DIRECT CURRENT: A =6.04, K =2160, M =1, T =1.

Courtesy Goodman Mfg. Co.

Constants for Transmission Line Calculations

Phases	Wires	Values of A	Values of K — Per Cent Power Factor 100	95	85	80	Values of T — Per Cent Power Factor 100	95	85	80
1		6.04	2160	2400	3000	3380	1.00	1.05	1.17	1.25
2	4	12.08	1080	1200	1500	1690	.50	.53	59	.62
3	3	9.06	1080	1200	1500	1690	58	61	.68	72

Wire No., B. & S. Gauge	Values of M — 25 Cycles — Per Cent Power Factor 95	90	85	80	60 Cycles — Per Cent Power Factor 95	90	85	80
0000	1.23	1.29	1 33	1.34	1.62	1.84	1 99	2.09
000	1.18	1.22	1.24	1.24	1.49	1.66	1.77	1.95
00	1.14	1.16	1 16	1 16	1.34	1.52	1 60	1.66
0	1.10	1.11	1.10	1.09	1.31	1.40	1.46	1.49
1	1.07	1.07	1.05	1.03	1.24	1.30	1.34	1 36
2	1 05	1.04	1 02	1 00	1 18	1.23	1.25	1.26
3	1.03	1.02	1 00	1.00	1.14	1.17	1.18	1.17
4	1 02	1.00	1 00	1 00	1.11	1.12	1.11	1.10
5	1.00	1 00	1.00	1.00	1 08	1 08	1.06	1.04
6	1 00	1 00	1 00	1.00	1 05	1 04	1.02	1.00
7	1.00	1 00	1.00	1 00	1 03	1 02	1 00	1.00
8	1.00	1 00	1 00	1 00	1.02	1.00	1.00	1.00
9	1 00	1 00	1 00	1.00	1 00	1 00	1.00	1 00
10	1.00	1.00	1.00	1.00	1 00	1 00	1.00	1.00

Properties of

Stranded Copper and Aluminum Cable

at 75° Fahrenheit

Conductivity: Copper 98%; Aluminum 62%

Wire No., B.&S. Gauge	Area, Circular Mils	Copper			Aluminum		
		Weight of Bare Cable, Pounds		Volts Lost per Ampere per 1000 Feet	Weight of Bare Cable, Pounds		Volts Lost per Ampere per 1000 Feet
		Per 1000 Feet	Per Mile		Per 1000 Feet	Per Mile	
	1000000	3050	16104	0.0105	920	4858	0.0166
	950000	2898	15299	.0111	874	4617	.0175
	900000	2745	14494	.0117	828	4374	.0185
	850000	2593	13688	.0124	782	4131	.0196
	800000	2440	12883	.0131	736	3888	.0207
	750000	2288	12078	.0140	690	3645	.0221
	700000	2135	11273	.0150	644	3402	.0237
	650000	1983	10468	.0162	598	3159	.0256
	600000	1830	9662	.0175	552	2916	.0276
	550000	1678	8857	.0191	506	2673	.0302
	500000	1525	8052	.0210	460	2430	.0332
	450000	1373	7247	0234	414	2187	0370
	400000	1220	6442	.0263	368	1944	.0416
	350000	1068	5636	.0300	322	1701	.0474
	300000	915	4831	.0350	276	1458	.0553
	250000	762	4026	0420	230	1215	.0664
0000	211600	645	3405	.0497	194.7	1028	.0785
000	167805	513	2709	.0625	154.4	816	.0987
00	133079	406	2144	.0789	122.4	647	1247
0	105592	322	1700	0995	97.1	513	1573
1	83695	255	1346	.1258	77.0	407	1988
2	66373	203	1072	.1579	61.0	323	.2495
3	52634	160	845	.2004	48.5	256	3168
4	41743	127	671	2525	38.5	203	3990
5	33102	103	544	.3112	30.2	161	.4920
6	26251	81	428	.3960	24.1	128	.6260

Breaking Strain of

Copper and Aluminum Wire and Cable

Ultimate strength of Annealed Copper taken at 34,000 pounds per square inch.

Ultimate strength of Hard Drawn Copper taken at 60,000 pounds per square inch, except: 50,000 pounds for Nos. 0000, 000 and 00, 55,000 pounds for No. 0, 57,000 pounds for No. 1.

Ultimate strength of Aluminum taken at 26,000 pounds per square inch.

Table gives actual breaking strains, to which a suitable safety factor must be applied to secure proper working strengths.

Wire No., B. & S. Gauge	Area, Circular Mils	Breaking Strain, Pounds			
		Copper, Solid		Aluminum	
		Annealed	Hard Drawn	Solid	Stranded
	1000000			20420	32280
	900000			18380	29050
	800000			16340	25820
	700000			14300	22590
	600000			12250	19370
	500000			10210	16140
	400000			8170	12910
	300000			6130	9680
	250000			5110	8070
0000	211600	5650	8310	4320	6830
000	167805	4475	6580	3430	5420
00	133079	3550	5226	2720	4290
0	105592	2800	4558	2150	3410
1	83695	2225	3746	1710	2700
2	66373	1775	3127	1355	2143
3	52634	1400	2480	1075	1700
4	41743	1115	1967	852	1350
5	33102	885	1519	657	1070
6	26251	700	1237	536	850
7	20817	550	980	426	
8	16510	440	778	337	
9	13094	350	617	267	
10	10382	275	489	212	
11	8234	220	388	167	
12	6230	175	307	133	
13	5178	135	244	105	
14	4107	110	193	84	

Weight of

Bare Copper Wire

Wire No., B. & S Gauge	Diameter, Inches	Area, Circular Mils	Weight of Bare Wire, Pounds	
			Per 1000 Feet	Per Mile
0000	0.460	211600	640.7	3383
000	.410	167805	508.1	2683
00	365	133079	403.0	2128
0	325	105592	319 7	1688
1	.289	83695	253.4	1338
2	.258	56373	201.0	1061
3	.229	52634	159.4	841.5
4	204	41743	126.4	667.4
5	.182	33102	100.2	529.2
6	.162	26251	79.5	419.7
7	144	20817	63.0	332.8
8	.129	16510	50.0	264.0
9	.114	13094	39.7	209.4
10	.102	10382	31.4	166.0
11	.091	8234	24.9	131.7
12	.081	6230	19.8	104.4
13	.072	5178	15.7	82.8
14	.064	4107	12.4	65.7
15	.057	3257	9.86	52.07
16	.051	2583	7.82	41.29
17	.045	2048	6.20	32.75
18	.040	1624	4.92	25.97
19	.036	1288	3.90	20.59
20	032	1021	3.09	16.33
21	.029	810.1	2.45	12.95
22	.025	642.5	1.95	10.27
23	.023	509.5	1.54	8.15
24	.020	404.0	1.22	6.46
25	.018	320.4	.97	5.12
26	.016	254.1	.77	4.06

Resistance of

Copper and Aluminum Wire

at 75° Fahrenheit

Conductivity: Copper 98%; Aluminum 62%.

Wire No., B.&S. Gauge	Area, Circular Mils	Copper			Aluminum		
		Volts Lost per Ampere		Feet per Ohm	Volts Lost per Ampere		Feet per Ohm
		Per 1000 Feet	Per Mile		Per 1000 Feet	Per Mile	
0000	211600	0.049	0.259	20393	0.078	0.410	12888.9
000	167805	.062	.327	16172	.098	.517	10236.9
00	133079	.078	.412	12825	.123	.652	8118.5
0	105592	.098	.519	10176	.155	.822	6441.7
1	83695	.124	.655	8066	.196	1.036	5105.8
2	66373	.156	.825	6396.7	.247	1.306	4049.1
3	52634	.197	1.04	5072.5	.311	1.646	2546.5
4	41743	.249	1.31	4022.9	.393	2.075	3210.9
5	33102	.314	1.66	3190.2	.496	2.620	2019.4
6	26251	.395	2.09	2529.9	625	3.305	1601.4
7	20817	.499	2.63	2006.2	.789	4.173	1269.9
8	16510	.629	3.32	1591.1	.994	5.255	1007.2
9	13094	.792	4.18	1262.0	1.253	6.627	798.8
10	10382	1.00	5.28	1000.5	1.580	8.360	633.3
11	8234	1.26	6.65	793.6	1.990	10.53	502.32
12	6230	1.59	8.39	629.3	2.513	13.29	398.35
13	5178	2.00	10.58	499.1	3.167	16.75	315.90
14	4107	2.53	13.34	395.8	3.992	21.10	250.54
15	3257	3.19	16.82	313.9	5.035	26.66	198.68
16	2583	4.02	21.21	248.9	6.345	33.55	157.55
17	2048	5.07	26.75	197.4	8.013	42.30	124.95
18	1624	6.39	33.73	156.5	10.11	53.40	99.09
19	1288	8.06	42.53	124.1	12.73	67.25	78.58
20	1021	10.16	53.64	98.44	16.07	85.06	62.31
21	810.1	12.81	67.63	78.07	20.25	107.1	49.42
22	642.5	16.15	85.27	61.92	25.53	134.9	39.20
23	509.5	20.37	107.5	49.10	32.20	170.3	31.08
24	404.0	25.68	135.6	38.94	40.65	214.8	24.65
25	320.4	32.38	171.0	30.88	51.23	271.0	19.55
26	254.1	40 84	215.6	24.49	64.65	341.8	15 50

Courtesy Goodman Mfg. Co.

Diameter and Weight of

Standard Weatherproof Insulated Copper Wire and Cable

Triple Braid

Wire No., B. & S. Gauge	Area, Circular Mils	Solid		Stranded	
		Diameter, Inches	Weight, Pounds per 1000 Feet	Diameter Inches	Weight, Pounds per 1000 Feet
	1000000	.....	.....	1.45	3674
	900000	.....	.....	1.39	3332
	800000	.....	.....	1 33	2992
	700000	.....	.....	1.27	2650
	600000	.....	.....	1.19	2235
	500000	.....	.....	1.11	1894
	400000	.....	.....	1.02	1553
	300000	.....	.....	.93	1174
0000	211600	0.66	767	.79	800
000	167805	.60	629	.73	653
00	133079	.55	502	66	522
0	105592	.51	407	61	424
1	83695	.45	316	.52	328
2	66373	:40	260	.44	270
3	52634	.37	208	.41	219
4	41743	.35	164	.38	170
5	33102	.32	130	.35	146
6	26251	.30	112	.33	115

Diameter and Weight of

Standard Weatherproof Insulated Copper Wire and Cable

Double Braid

Wire No., B. & S. Gauge	Area, Circular Mils	Solid		Stranded	
		Diameter, Inches	Weight, Pounds per 1000 Feet	Diameter, Inches	Weight, Pounds per 1000 Feet
	1000000	.....	.....	1.37	3456
	900000	.....	.....	1.31	3127
	800000	.....	.....	1.24	2799
	700000	.....	.....	1.18	2471
	600000	.....	.....	1.11	2093
	500000	.....	.....	1.03	1765
	400000	.....	.....	.94	1436
	300000	.....	.....	.85	1083
0000	211600	0.61	723	.71	745
000	167805	.56	587	.65	604
00	133079	.52	467	.60	482
0	105592	.47	377	.56	388
1	83695	.41	294	.47	303
2	66373	.37	239	.42	246
3	52634	.35	185	.38	190
4	41743	.32	151	.35	155
5	33102	.30	122	32	126
6	26251	.28	100	.31	103

Diameter and Weight of

Rubber Insulated Copper Wire and Cable

National Electric Code Standard. 0 to 600 Volts

Triple Braid

Wire No., B. & S. Gauge	Area, Circular Mils	Solid		Stranded	
		Diameter, Inches	Weight, Pounds per 1000 Feet	Diameter, Inches	Weight, Pounds per 1000 Feet
	1000000	.....	.....	1.54	3637
	900000	.....	.....	1.48	3304
	800000	.....	.....	1.42	2968
	700000	.....	.....	1.35	2631
	600000	.....	.....	1.28	2290
	500000	.....	.....	1.17	1906
	400000	.....	.....	1.09	1573
	300000	.....	.....	.99	1226
0000	211600	0.78	835	.85	879
000	167805	.73	685	.79	719
00	133079	.69	564	.74	595
0	105592	.65	474	.70	494
1	83695	.61	395	.66	412
2	66373	.51	297	.59	324
3	52634	.48	247	.52	260
4	41743	.46	208	.49	218
5	33102	.41	167	.46	184
6	26251	.39	142	.41	149

Diameter and Weight of

Rubber Insulated Copper Wire and Cable

National Electric Code Standard. 0 to 600 Volts

Double Braid

Wire No., B. & S. Gauge	Area, Circular Mils	Solid		Stranded	
		Diameter, Inches	Weight, Pounds per 1000 Feet	Diameter, Inches	Weight, Pounds per 1000 Feet
	1000000	.....	.....	1.46	3553
	900000	.....	.....	1.40	3223
	800000	.....	.....	1.33	2891
	700000	.....	.....	1.27	2557
	600000	.....	.....	1.19	2220
	500000	.....	.....	1.09	1842
	400000	.....	.....	1.00	1514
	300000	.....	.....	.90	1173
0000	211600	0 70	793	.77	833
000	167805	65	646	.71	675
00	133079	.61	528	.66	556
0	105592	.57	439	.61	457
1	83695	.53	363	.57	377
2	66373	.45	276	.50	293
3	52634	.42	228	.45	238
4	41743	.39	190	.42	198
5	33102	.36	154	.40	166
6	26251	.34	130	.36	136
7	20817	.30	105	.32	108
8	16510	.27	82 1	.29	85 5
9	13094	.26	68.4	.27	70 0
10	10382	.25	58.1	.26	60 6
11	8234	.24	50.0	.25	52 3
12	6230	.23	43 1	24	44 9
13	5178	.22	38.5	.23	39 6
14	4107	.21	33.0	.22	34 3

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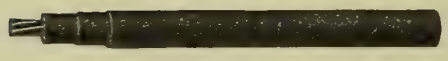
AMERICAN STEEL & WIRE CO.

Sales Offices

CHICAGO	208 So. La Salle Street	CLEVELAND	Western Reserve Building
NEW YORK	30 Church Street	BALTIMORE	32 So. Charles Street
WORCESTER	94 Grove Street	WILKESBARRE, PA.	Miners Bank Building
BOSTON	120 Franklin Street	ST. LOUIS	3d National Bank Building
PHILADELPHIA	Pennsylvania Building	ST. PAUL-MINNEAPOLIS	Pioneer Bldg., St. Paul
PITTSBURGH	Frick Biulding	OKLAHOMA CITY	State National Bank Building
BUFFALO	337 Washington Street	BIRMINGHAM, ALA.	Brown-Marx Building
DETROIT	Foot of First Street	DENVER	1st National Bank Building
CINCINNATI	Union Trust Building	SALT LAKE CITY	Walker Bank Building

Export Representative: U. S. Steel Products Co., New York
Pacific Coast Representative: U S. Steel Products Company
San Francisco Los Angeles Portland Seattle

ELECTRICAL WIRES



Americore Rubber Covered Wire.



Solid Conductor Rubber Covered Lead Encased Wire.



Duplex Parallel Mining Machine Cable.



Concentric Mining Machine Cable.



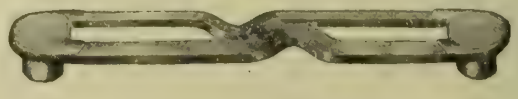
Reliance Weatherproof Cables.

Products

We manufacture bare copper wires and cables for telephone, telegraph and power transmission purposes; also insulated wires of all kinds such as weatherproof wires and cables, magnet, annunciator and office wire, lamp cord, sub-marine cables, car wires, together with all kinds of rubber covered wires and lead encased cables for interior and exterior purposes. Our mining machine cables are made with special strong braids which withstands abrasion to advantage. We also make them in a hard spun cotton braid when the usage is extra severe.



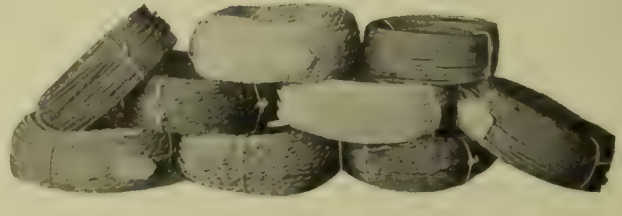
Copper Trolley Wire.



United States Rail Bond.

Stocks

Are carried with jobbers and dealers in all mining communities also in our warehouses at Chicago, New York, Pittsburgh, Buffalo, Cleveland and St. Louis.



CINCINNATI ELECTRICAL REPAIR CO.

322 Sycamore Street

Cincinnati, Ohio

Repairers of Electrical Machinery

Products

We specialize in the repairing of all kinds of electrical apparatus, especially motors and dynamos. We are in the best position to give you the kind of service you want.

Experience

Our theoretical training and practical experience, together with our honest business principles, have placed us in the class of reliable concerns.

Workmanship

Our workmanship is guaranteed and our materials for insulation are absolutely the best.

Service

We make every effort to complete repairs in the least possible time, but not at the expense of the work not being properly done. We realize the necessity of prompt and satisfactory work and are fully able to handle that end.

Equipment

We are especially equipped for rewinding armatures and field coils, refilling commutators, repairing arc lamps, fans, rheostats, heating devices and electrical machinery used in any industry; direct or alternating current.

Prices

Our prices are based on the actual work done and not on what we might be able to get. You will find that you are satisfied in every particular with our service.

We wish it understood that our terms for doing business are:

PROMPT SERVICE.

SATISFACTORY WORK.

REASONABLE PRICES.

Second Hand Motors and Dynamos

We have a stock of used motors and dynamos that have been completely overhauled and which we guarantee to be in first class condition.

CLEVELAND ARMATURE WORKS

Cleveland, Ohio

Manufacturers of

Parts for repairing Electrical Machinery and Apparatus, all types. Complete Duplicate Armatures, Armature Shafts, Armature Discs, Armature Insulation, Oil Collars, End Plates and Nuts, Armature Coils, Armatures Rewound, Commutators Complete, Refilled or Assembled, Field Coils Complete, Repaired or Insulated, Brush Holders, Carbon Brushes.



Disc Punching Machinery.



Machinery for General Work.



Armature Winding Department.



Armature, Coil and Field Winding.

Our equipment consists of iron and wood working, armature, armature coil and field winding machinery, special and regular, of every kind necessary to a twentieth century rapid fire cost-reducing plant.

A corps of skilled mechanics, culled and picked from the general run of twenty years. A testing laboratory as complete as modern science has been able to produce. If practice makes perfect, we feel that our twenty years' experience in the repair business, our peep under the cover of practically every make of electric generator, dynamo and motor made, our coming in contact and repairing every conceivable kind of trouble, is of value to the user, both in keeping his machinery in working condition and lightening the pull on the purse string, notwithstanding the first cost, which may be slightly higher than others charge.





Armature, Coil and Field Insulating Department.



Commutator Department.



Assembling Department.



Miscellaneous.

CONDIT ELECTRICAL MFG. CO.

BOSTON. MASS.

New York, 39 Cortlandt St.
Philadelphia, 1011 Chestnut St.
Pittsburgh, 422 First Ave.
Akron, Flatiron Bldg.
Seattle, 617 Fourth Ave.

Chicago, 318 West Washington St.
Atlanta, 1206 Empire Bldg.
Denver, 1621 17th St.
Birmingham, Brown-Marx Bldg.
Cincinnati, 816 Mercantile Library Bldg.

Northern Electric Company, Limited, Sole Distributor for the Dominion of Canada, Montreal, Halifax, Toronto, Winnipeg, Regina, Calgary, Edmonton, Vancouver, Victoria.

Products

Oil Circuit Breakers, Oil Switches, Oil Motor Starters, Carbon-Break Circuit Breakers, Relays, Transformers and Switchboards.

Motor Protection

Condit oil circuit breakers and oil switches are made in various capacities ranging from those suitable for protecting the smallest motors up to those designed for controlling the largest motors.

Generator and Feeder Protection

We also manufacture oil circuit breakers and oil switches for the protection of generator and feeder circuits up to 6000 amperes at 3300 volts or less, also up to 1000 amperes at 15000 volts.

Transmission Line Protection

For use on transmission lines, we build oil switches up to 300 amperes capacity at 70000 volts.

Carbon-break Circuit Breakers

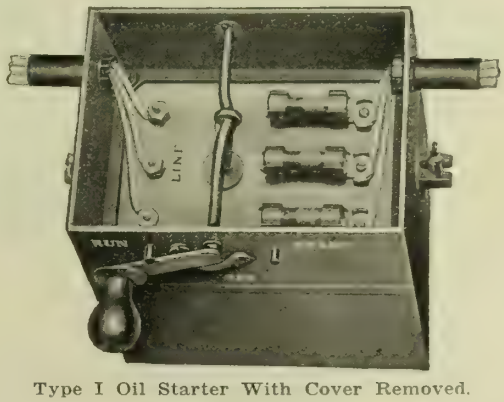
Our carbon-break circuit breakers are made in all capacities up to 8000 amperes at 600 volts or less.

Switchboards

We also design and build switchboards for lighting and power circuits.

Type I Oil Starter

The Type I Oil Starter is designed for use with small induction motors. It allows you to fuse the



Type I Oil Starter With Cover Removed.

motor for proper overload protection without blowing the fuses in starting. It also prevents polyphase motors, when properly fused, from running single phase.

The Type I Oil Starter is dustproof, foolproof, fireproof and totally enclosed. It more than meets the "Safety First" requirements. The Type I is made in capacities up to 30 amperes at 600 volts or less.

Our entire line is fully described and illustrated in Bulletins 400 to 409A inclusive.

DOUBLEDAY-HILL ELECTRIC CO.

719-721 Liberty Avenue
PITTSBURGH, PA.

Mine Electrical Supplies

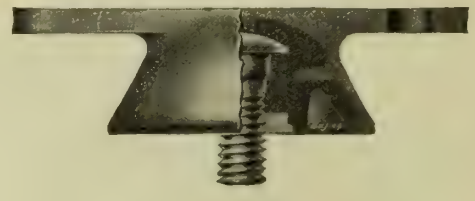
Products

With the facilities offered in our large and well-stocked ten-floor building, we are able to serve our patrons in the most efficient and satisfactory manner with Electrical materials of the highest quality.



Complete stock of wires and cables both bare and insulated; carbon and Edison Mazda Lamps, insulating tapes and materials, switches of all kinds; trolley hangers, ears and splicers; insulators of all kinds; telepphones, signal bells and batteries. We manufacture a line of high grade trolley wheels. We ship all orders for standard material out of our stock the same day they are received, this being accomplished throuh a thoroughly systemized organization and the employment of the latest labor and time-saving devices.





Our experience in electric mine equipment enables us to give you valuable service in the selection of material best suited to your requirements and we offer you the benefit of such service.

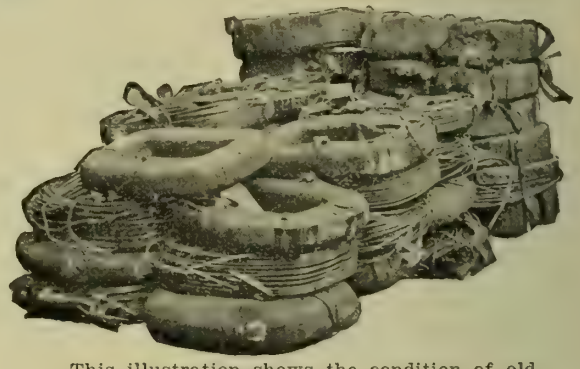
Repair Department

We operate a complete Manufacturing and Repair Department. Also manufacture Armature Coils, Field Coils, Commutators and Shafts for Mill and Mine Armatures; we make a specialty of rewinding Armatures and all such work is done by expert workmen, who have had years of experience in this particular line. All work sent out by us is thoroughly guaranteed.

Do not scrap your burned-out field coils if made of No. 6 wire or heavier (or strap copper). We reinsulate the old wire and impregnate the coils with a black plastic baking varnish.

Send us a few of your burned out field coils for demonstration. We will return to you the same number and types of coils. We thus furnish you practically new coils at about one-half the cost of new ones and you secure coils at minimum expense. Let us prove this.

Before



This illustration shows the condition of old burned out field coils as received by us.

After



This view shows the same coils after we have removed the old insulation, reinsulated the wire and rewound and finished it into same type of coil.

Fire Proof Armature and Field Coils

We make them from Salander Fire Proof Magnet Wire, with special Asbestos Tape Winding.

Get our proposition. Write us for it to-day.

DUDLEY ELECTRIC & MACHINE CO.

Successors to

Uniontown Iron Works and Electric Company

Main Office and Shop:
UNIONTOWN, PA.



Branches:
BROWNSVILLE, PA.
CLARKSBURG, W. VA.

"We Never Sleep"

Electrical and Mechanical Repairs and Supplies

Products

We Manufacture Armature Coils; Armature Shafts; Commutators; Brass Castings; Special Machinery and repair parts.

We Wind Armatures; Fields; Induction Motors and Coils for all purposes.

We Specialize on Second Hand Machinery. All machines are thoroughly overhauled and tested before leaving our shop.

We Repair Boilers, Engines, Air Compressors, Pumps and Machinery of all kinds.

We Furnish and Install Power Plants; Hoisting, Haulage and Stationary Motors; New and second hand.

All work guaranteed.

Our Organization

is composed of men who are experts in their particular lines. It has always been the policy of this Company to secure and retain at any cost men whose experience in and about electrically operated mines render them especially capable of handling this class of work; by this means we have built up a highly efficient organization.

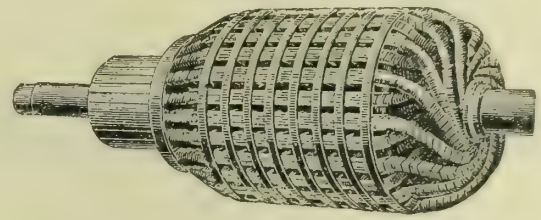
Location

Our main shop, at Uniontown, is located close to the several freight stations and express offices, and we have ideal facilities for handling heavy shipments, while our branch shops at Brownsville, Pa., and Clarksburg, W. Va., are maintained for the purpose of taking care of emergency work in their immediate localities.

Equipment

Our claim of superiority in this respect is based upon the fact that we have, in connection with our Electrical Repair Department, a modern Machine Shop equipped with machinery especially adapted for the work as outlined above, together with Blacksmith Shop, Brazing Apparatus, and Brass Foundry, including a modern tilting furnice, which enables us to get out Brass Castings to your orders on short notice.

Our Electric Department is equipped with the very latest machinery for the manufacturing of Armature Coils and Commutators. A Hydraulic



Press for renewing armature shafts, locomotive axles, etc., while our methods of testing, treating and baking electrical apparatus; the results of a series of systematic experiments, based on observations through many years experience in and about mines, are best calculated to prolong the life and increase the efficiency of such apparatus when operating in damp, dusty and greasy places, and when subject to the severe duty which is quite frequently met with in mining operations.

Policy and Service

Our success is largely due to the fact that we have always maintained a policy of standing back of our work and seeing to it, that it gives service which is entirely satisfactory, although it may involve going beyond the terms of our liberal guarantee. Realizing fully the necessity of promptness in handling work of this kind we have arrangements, whereby we can work straight through night and day on break down and emergency jobs, and in addition to this we carry in stock a large assortment of armature coils, shafts, commutators, and other parts for standard machines, by means of which we are able to get work out very promptly.

We solicit your inquiries, welcome suggestions, invite criticism, and assure you that any and all correspondence will receive prompt and courteous attention.

ELECTRIC SERVICE SUPPLIES CO.

Manufacturer of Electric Railway and Mine Haulage Material

GENERAL OFFICES AND FACTORY:

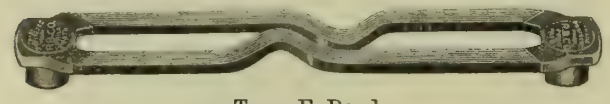
17th and Cambria Streets, Philadelphia, Pa.

CHICAGO, ILL., 417 So. Dearborn St.
NEW YORK, Hudson Terminal.
GEE ELECTRIC CO., Wheeling, W. Va.
JOHN MILLEN & SON, Ltd., Montreal, Toronto, Winnipeg, Vancouver, Victoria.
PITTSBURGH, PA., 2350 Oliver Bldg.
ATLANTA, GA., 1526 Candler Bldg.
ECCLES & SMITH CO., Los Angeles, San Francisco, Portland, Ore.

Products.

Electrical equipment for mine haulage systems; "Protected" Rail Bonds; Rail Bond Testers; Keystone Trolley Hangers, Clamps, Ears, Expansion Bolts; Porcelain and Glass Insulators; Garton-Daniels Lightning Arresters; Keystone Electric Block Signals; Pneumatic Signalling Systems; Electric and Magneto Signalling Systems; Keystone Water-Tight Telephones; "Safety-First" and other Signs—Illuminated and Plain; The Automotoneer—A Controller Regulator; Peerless Armature Repair Machinery; Trolley Material—Poles, Bases and Wheels; Arc and Incandescent Headlights; Keystone Steel Gear Cases; Locomotive Gears and Pinions; Keystone Sand Driers; Keystone Lamp Guards.

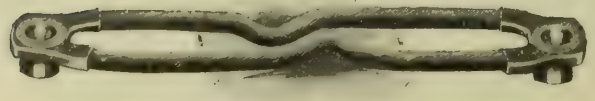
All of the above lines and many more are fully covered in our complete mining catalogs, and in numerous special catalogs, copies of which will be sent to interested parties.



Type F Bond.



Type P-4-P Bond.



Type F-C-P Bond.

"Protected" Rail Bonds for Every Condition.

With your system bonded with "Protected" Rail Bonds, you will get maximum conductivity in your track return; your locomotives will be able to carry their full rated load without taking excessive current; you'll get fewer motor burn-outs; better lighting service; more cars per trip; less time per trip; and all this means that increased tonnage will be the inevitable result.

"Protected" Rail Bonds have terminals and strands of pure lake copper of high conductivity, united by the most improved forging and welding process known. In "Protected" Rail Bonds you get the well-known "Shot-Over" sleeve feature—a copper sleeve surrounding and protecting the strands at their point of emergence from the terminal, assuring you that the strands won't break at this point.

Made in both flat wire and cable forms, compressed terminal and pin driven types and are furnished to meet every possible service condition.

Over eight millions in daily service.

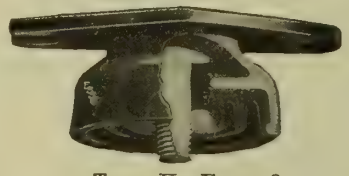
Have you our special Rail Bond Catalog?



Type K—Form 10



Type S—Form 8

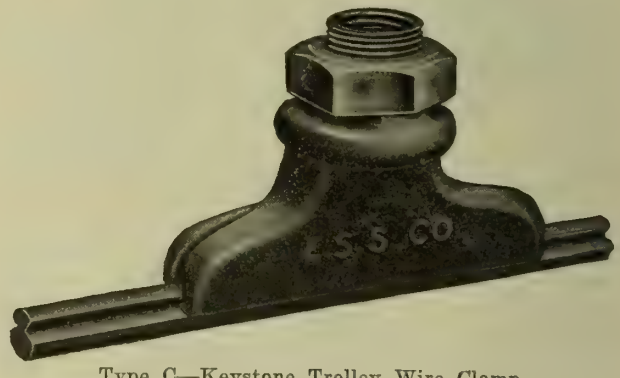


Type K—Form 2



Type G—Form 2

Typical Keystone Trolley Hangers.



Type C—Keystone Trolley Wire Clamp.

The Line of Keystone Overhead Material Is Complete.

For supporting your trolley wire, your needs call for material that is the best; material that possesses properties of high insulation, great strength, proper design—material that has proven all this in the only thorough test, **the test of actual service.**

The entire line of Keystone Overhead Material is so varied and so flexible that your most exacting conditions can be met exactly.

Trolley hangers are designed for attaching direct to horizontal or vertical timbers or pipe, expansion bolts or to structural steel; are correctly and scientifically designed, and are insulated with Keystone Insulating Compound, standard for years in mining and railway service.

Keystone Trolley Ears and Clamps are made in many styles. The type C mechanical clamp shown above is a strong, cheap clamp, which has but three parts. They are easy to apply or remove, have a total depth of but 2⅜ inches, and are furnished for round, grooved and figure 8 wires.

Ask for Complete Catalog on Keystone Overhead Material.

"Safety First" Sign Equipment.



Illuminated Danger Sign.

"Safety First" Signs are supplied in many different types, both regular and special, illuminated and plain. The illuminated danger sign shown herewith is a valuable sign to install around electrical equipment. It is printed in five languages on enamelled steel, and is illuminated by one 16 c.p. incandescent lamp.

Ask us for your "Safety First" equipment.



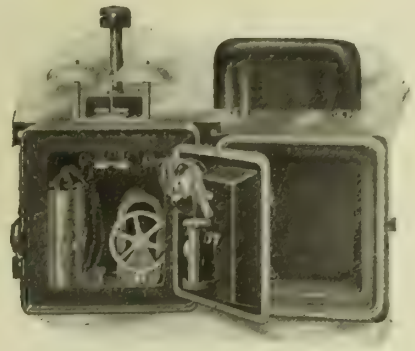
Mine Signalling Systems.

Complete signalling systems, both pneumatic and electric, are furnished by this Company. The signal magneto illustrated above meets the demand for a positive signalling system for mines, does away with the necessity of using batteries, and is absolutely positive in its action.

The lever of this signal magneto operates only on the down stroke, and automatically returns by spring pressure, its movement being confined between two fixed stops, thus producing a positive, measured signal and avoiding indistinct or uncertain signals, which are often caused with the ordinary signalling magneto by the operator giving the crank an insufficient number or too many turns.

The magneto shown above is equipped with either five bar bridged or series generators, is mounted in a substantial iron case, thoroughly waterproof, and delivers sufficient current to operate ten or more bells under average line conditions.

Further details on request.



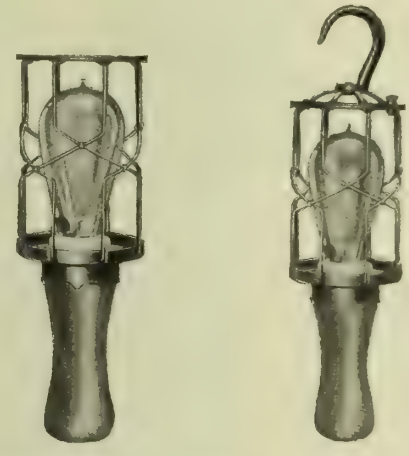
Keystone Telephone Opened Up.

Keystone Water-Tight Telephones.

The Keystone Water-Tight Telephone (Mine Type) is a mine telephone out and out. It has been designed for the most rugged conditions ever met in service. Every working part is absolutely sealed against the effects of gas or moisture. Even the bell clapper does not leave an opening in the case—it is operated by magnets inside the case, the magnetic field for operating same being transmitted through the iron. Down to the most minute details the Keystone Telephone is for hard, rough service, where the greatest reliability is demanded.

Standard with many of the largest mining companies in the country.

We have a special catalog on Keystone Mine Telephones. Have you a copy?



Keystone Portable Lamp Guards.

Keystone Lamp Guards are made **for service,** for service in mines, tunnels, engine roms, repair shops, any place where requirements call for **a safe, strong, durable** lamp guard.

Guards illustrated above are made entirely of malleable iron and steel parts and provided with well seasoned hard maple handles. Cages are of Bessemer steel wire, electrically welded at joints and all parts heavily tinned. All guards are insulated for 600 volts. Used for years by many of the largest operators throughout the country. Booklet on request.

Catalogs.

The various general and special catalogs published by this Company on Electric Mine Equipment should be in the library of every mining man. They will be sent on request.

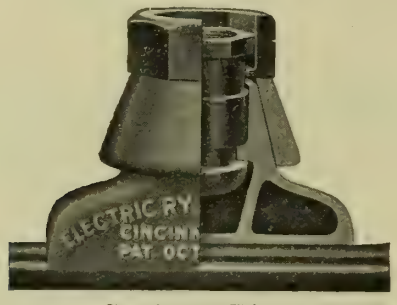
ELECTRIC RAILWAY EQUIPMENT COMPANY

General Offices and Factory: CINCINNATI, OHIO

FACTORY REPRESENTATIVES:

CHICAGO, ILL.: W. R. Garton Co., 11 Desplaines St.,
SEATTLE, WASH.: H. G. Behneman, 316 James St.
PITTSBURGH, PA.: Cooke-Wilson Electric Co., Penn Ave. and 3rd St.
CLEVELAND, OHIO: Cooke-Wilson Co. of Ohio, 714 Columbia Building.
CHARLESTON, W. VA.: Cooke & Wilson Co.
DENVER, COLO.: Mine & Smelter Supply Co.
BLUEFIELD, W. VA.: Superior Supply Co.
EL PASO, TEXAS: Mine & Smelter Supply Co.
SALT LAKE CITY, UTAH: Mine & Smelter Supply Co.
KNOXVILLE, TENN.: C. M. McClung & Co.
BIRMINGHAM, ALA.: McClary-Jemison Machinery Co.
NEW YORK CITY, N. Y.: J. G. Kipp, 30 Church St.
ST. LOUIS, MO.: Grayson Railway Supply Co., 405 La Salle Building.
JELLICO, TENN.: Arthur L. Ware.

Products—"Sure Grip" Trolley Clamps, "Black Diamond" Mine Hangers, Trolley Frogs, Section Insulators, Line Section Switches, complete line of Overhead Line Material.



Sectional View
Sure Grip Clamp.

The "Sure Grip" Trolley Wire Clamp was designed for Mine use and has been adopted as standard by the majority of mines in the United States. While not the cheapest clamp considering first cost alone, it has been conclusively proven by actual service to be more economical and satisfactory than any other clamp ever placed on the market.

A Few of the Good Points to Remember.

(1) One operation attaches clamp to hanger and secures trolley wire in the jaws with the grip of a vise.

(2) Cut shows all parts locked together—impossible to have a "Sure Grip" Clamp with any part missing.

(3) Figure 8 Clamp takes all sizes of figure 8 wire—grooved clamp all sizes of grooved wire.

(4) The "Sure Grip" is installed in just one-half the time required for any other clamp.

(5) No exposed threads to be corroded by mine water, clamp can be instantly removed from hanger and used in other parts of the mine when required.

(6) Short jaws—no obstruction to trolley wheel on curves.

(7) Wide opening jaws, no difficulty to insert trolley wire which has become kinked or bent.

(8) No adjustment necessary with "Sure Grip" Clamp. Attach to hanger stud, insert trolley wire and tighten hexagon nut.

(9) If necessary to "take up" slack in trolley wire, loosen hexagon nut on "Sure Grip" Clamp one turn, wire will not drop out of clamp but is free to slip through jaws.

"Sure Grip" Trolley Clamps are furnished in malleable iron or bronze metal, also with "feed in" or strain cups instead of plain. Fully covered by patents.



Type B. D. 1.

"Black Diamond" Mine Hangers arranged for attachment direct to mine roof or timber supports, height over all 1½ inches. Special finish insures hangers against corrosion from mine water.

Insulation absolutely impervious to mine air and moisture, and each hanger tested to 5000 Volts.

CATALOG No 14 ON REQUEST.



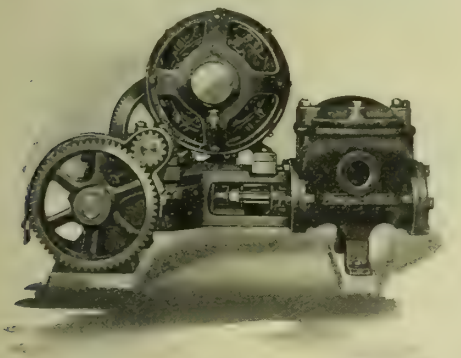
Type B. D. 2.
For Expansion Bolt.

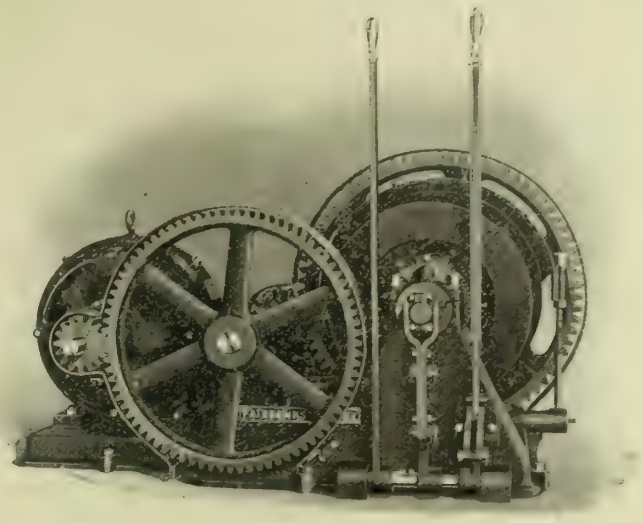
FAIRBANKS, MORSE & CO.

CHICAGO NEW YORK CINCINNATI ST. LOUIS
CLEVELAND ATLANTA LOUISVILLE

Designers and Builders of

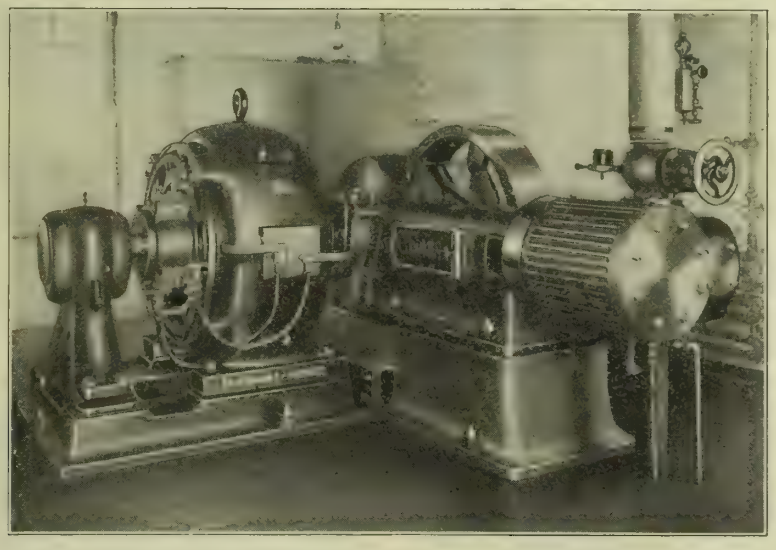
Alternating and Direct-Current Motors and Generators for all classes of mine work; also building a complete line of electrically driven mine pumps, for pumping against all heads encountered in coal mining work; and electrically driven hoists for medium and heavy duty.





Reciprocating Pumps with Direct-Current Motors.

Reciprocating pumps for sump work and general mining service in pumping against medium and high heads, are furnished as units with direct connected motors, in several designs, and in capacities up to 3000 gallons per minute.



Mine Hoists

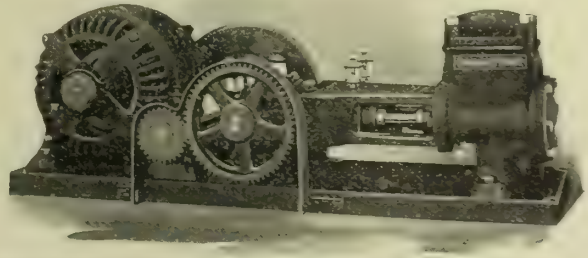
These single-drum gear hoists are furnished as complete sets, solidly mounted on heavy iron base, and for medium and heavy-duty mine hoisting service. Both direct-current and alternating-current motors are manufactured for the sets.

Electric generators are supplied for both direct connected and belted work, and are especially suited to the difficult requirements of mining service, because of their strong construction and heavy insulation.



Motor-Driven Centrifugal Pumps

Single and multi-stage, motor-driven centrifugal pumps are supplied as complete units with direct or alternating-current motor, for mine pumping against medium and high heads, in capacities up to 5000 G. P. M. The ability of these pumps to handle dirty and gritty water efficiently, adapts them especially to coal mine service.



Reciprocating Pumps With Alternating Current Motors.

This illustrates a standard form of gear driven reciprocating pump. Any of the complete line of power pumps can be supplied as a unit with direct or alternating-current motor; for coal mine service in pumping against high or medium heads, and in capacities to 3000 G. P. M.

FLOOD CITY MANUFACTURING CO.

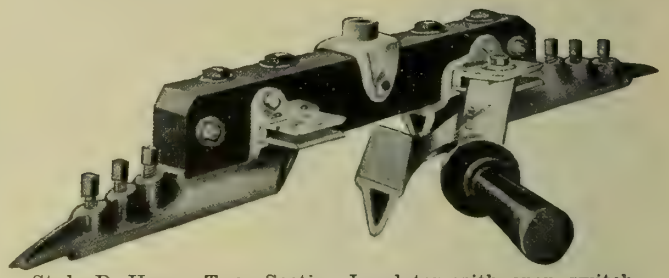
Manufacturers of

Brass and Bronze Castings and Electrical Mine Equipment

JOHNSTOWN, PA.

Products

We manufacture a complete line of Section Insulators. The "Diamond" Mining Trolley and Parts, Trolley Wheels, Bushings, Trolley Poles, etc. Splicers, Trolley Wire Frogs, Mine Sprinklers, Brass and Bronze Parts and Castings for Mining Machines, Electric Locomotives, Pumps and for all purposes around a mine, Acid Resisting Metals for all purposes.



Style D, Heavy Type Section Insulator with open switch. Note complete break.



Style D, Heavy Type Insulator closed—with switch blade or "fin" in place—note the complete smooth contact.

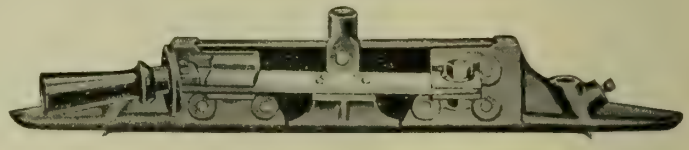
Type H H and Style D Section Insulators

On this page we illustrate two different styles of Section Insulators, which are: a combined Section Insulator and Line Switch in one. This switch is right on your trolley line and is a great cost cutter. It saves your trolley wheels, trolley line, breakers, motors and motor gears, because there is no dead section in your trolley line, just a straight, smooth, metallic underrun; no breaking and remaking the contact with a jump to injure your motors. The trolley wheels pass smoothly over.

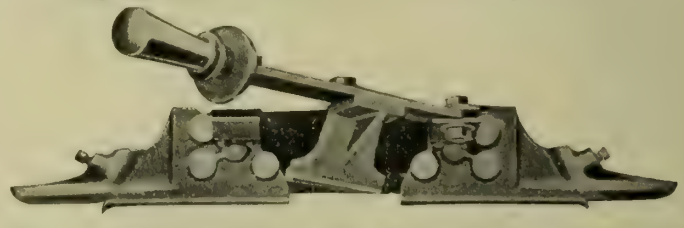
The destructive arcing features are eliminated by using these types of switches. It stands for increased efficiency in your trolley line equipment; it is easy to install and operate; it enables you to cut out certain sections of your trolley line equipment without interruption to the whole system; it does away with the old styles Section Insulator and separate Switch. It is more efficient than both, and cheaper than either to install and maintain.

STYLE "D" SECTION INSULATOR SWITCH

Code Word	No.	Size and Style Wire	List Price Each
Daily	543	1 and 2-0 Round or Grooved	$12.50
Dale	544	3-0 Round or Grooved	12.50
Dalle	545	4-0 Round or Grooved	12.50
Dally	546	2-0 Fig. 8 Wire	12.50
Dane	547	3-0 Fig. 8 Wire	12.50
Dado	548	4-0 Fig. 8 Wire	12.50



Type H. H. Section Insulator with switch closed—note the complete metalic underrun for wheel to pass over.



Type H H, Section Insulator with switch open, showing broken circuit in trolley line.

TYPE H H SECTION INSULATOR

Code Word	No.	Size and Style Wire	List Price Each
Rely	500	1 and 2-0 Round or Grooved	$11.00
Reliable	501	3-0 Round or Grooved	11.00
Reliance	502	4-0 Round or Grooved	11.00
Relier	503	2-0 Fig. 8 Wire	11.00
Reliant	504	3-0 Fig. 8 Wire	11.00
Relay	505	4-0 Fig. 8 Wire	11.00

BRONZE TROLLEY SPLICER

With ⅜ inch Steel Set Screws on each end. Made for Round, Grooved or Figure 8 Trolley Wire.



Code Word	No.	Size and Style Wire	List Price Per 100
Able	523	1-0 Round or Grooved Wire	$80.00
Ability	524	2-0 Round or Grooved Wire	80.00
Abbey	525	3-0 Round or Grooved Wire	80.00
Abbot	526	4-0 Round or Grooved Wire	80.00
Abate	527	2-0 Figure 8 Wire	80.00
Abet	528	3-0 Figure 8 Wire	80.00
Abduce	529	4-0 Figure 8 Wire	80.00

BRONZE TROLLEY SPLICERS WITH TOP HANGERS

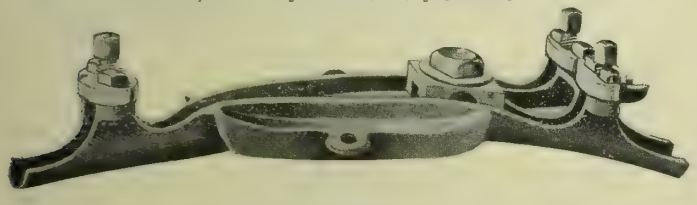
With ⅜ inch Steel Set Screws on each end.



Code Word	No.		List Price Per 100
Ban	530	1-0 Round or Grooved Wire	$90.00
Band	531	2-0 Round or Grooved Wire	90.00
Bandage	532	3-0 Round or Grooved Wire	90.00
Bandit	533	4-0 Round or Grooved Wire	90.00
Bandy	534	2-0 Figure 8 Wire	90.00
Bang	535	3-0 Figure 8 Wire	90.00
Bane	536	4-0 Figure 8 Wire	90.00

BRONZE TROLLEY WIRE FROGS

Made from aHigh Grade of Bronze; 20 Degrees, Right or Left Hand, for Any Size or Style Wire.



Code Word	No.	Standard Bronze Frogs, 20 Degrees	List Price Each
Dare	537	1 or 2-0 Wire, Right Hand	$4.75
Daring	538	3-0 Wire, Right Hand	4.75
Dart	539	4-0 Wire, Right Hand	4.75
Dash	540	1 or 2-0 Wire, Left Hand	4.75
Date	541	3-0 Wire, Left Hand	4.75
Daunt	542	4-0 Wire, Left Hand	4.75

MINE SPRINKLER

Frame

The frame of this apparatus is made of reinforced channel iron which is rigidly cross braced and mounted on proper axles. It provides ample and suitable foundation space for the automatic air compressor. Can be had with either single or double end bumpers.

Reservoir

This is a rivited steel reservoir 30 inches in diameter by 8 feet 6 inches long, and has a working pressure of 100 lbs. to the square inch.



Automatic Air Compressor

Is equipped with a motor compressor which is automatically controlled. It can be furnished in five different sizes ranging in capacity from 2 H. P., 11 cubic feet per circuit, to 9.5 H. P., giving 50 cubic feet per circuit.

The Sprinkler

Works on the same principle as an atomizer. The nozzles are so arranged as to spray in both verticle and horizontal directions.

The operation of the outfit is entirely automatic and safe guarded against over pressure, by safety valves and an air pressure gauge.

For handling liquids a 2 H. P. compressor is of ample size, but for an air compressing plant the motor should be the 9.5 H. P. equipment. The springler can be equipped with either a 250 or 500 volt motor.

For White Washing

To use the sprinkler in white washing the reservoir is filled with white washing compound which is ejected through rubber hose and spraying nozzle. The white washing compound does not pass through the regular mine sprinkling nozzle. A special attachment is provided for this purpose.

A Portable Compressed Air Plant

The automatic air compressor is very valuable, especially when used in connection with ordinary air operated drills of small capacity, for sinking holes in the roof, for mine hangers, telephone or other cable supports.

In Case of Fire

The mine sprinkler is again useful. It is very effective as a small fire fighter.

"DIAMOND" MINING TROLLEY AND PARTS

The "Diamond Mining Trolley increases efficiency,—thats the advantage. Note why.

The pole head is smooth and oval backed, making nearly a straight line connection—which prevents harp or wheel catching on the trolley line. It will not wedge or catch in a frog but slides smoothly through.

Note the reinforcced harp support between pole head and harp is strong—insures perfect contact and connection. It does not bend or loosen—even if the trolley leaves the wire and strikes against the roof.

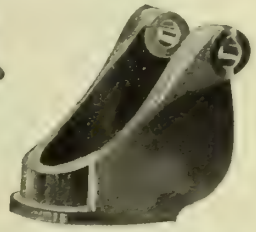
We have increased the length of the cable connection. It gives a greater contact surface making a stronger and more effective connection.



No. 506—Diamond Trolley Complete with Pole, Pole Head, Harp, Wheel and Axle Pin.



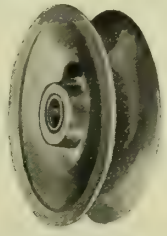
No. 508—Trolley Pole Head



No. 509—Trolley Harp



No. 510
Harp Swivel Bolt



No. 512
Trolley Wheel

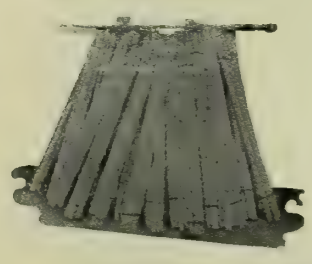


No. 511
Trolley Wheel Axle Pin with Cotters

Code Word	No.	Name of Part	List Price Each
Effect	506	Diamond Trolley Complete with Pole, Polehead, Harp, Wheel and Axle Pin	$10.50
Enduce	507	Trolley Polehead and Harp Complete without Pole and Wheel	8.00
Efficient	508	Trolley Pole Head	5.10
Effort	509	Trolley Harp, less Axle Pin	2.50
Efficiency	510	Harp Swivel Bolt	.16
Efficacy	511	Trolley Wheel Axle Pin with Cotters	.24
Elligible	512	4 Inch Trolley Wheel	1.40
Empire	513	5 Inch Trolley Wheel	2.00

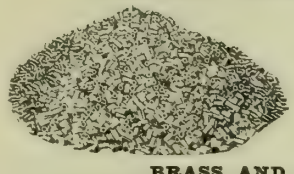
DIAMOND TROLLEY POLES

Made from selected grade of oak and ash wood. Perfectly straight, smooth, dry and free from knots.



Cat.	Size	List Pr. Ea.
549	3'10" x 2¼" x 1⅜"	.60
550	4' x 2¼" x 1⅜"	.60
551	4'06" x 2¼" x 1⅜"	.70
552	5' x 2⅜" x 1⅜"	.80
553	5'06" x 2¼" x 1⅜"	.80
554	6' x 2¼" x 1⅜"	.90
555	7' x 2¼" x 1⅜"	1.00
556	8' x 2¼" x 1⅜"	1.10
557	9' x 2¼" x 1⅜"	1.40

GRAPHITE TROLLEY WHEEL BUSHINGS



Bound Brook Type.

Code Word	No.	Outside Diam.	Size of Hole	Length	List Per 100
Braze	520	⅝"	⅜"	1½"	$24.00
Brazen	521	1"	½"	1½"	26.00
Brazier	522	1⅛"	⅝"	1½"	28.00

BRASS AND BRONZE CASTINGS

We have made a careful study of conditions around coal mines as to the needs of Brass and Bronze or Acid Resisting Metal Castings and we are prepared to furnish repair parts for mining machines, locomotives, pumps, etc.

These goods have our guarantee and meet actual mining conditions.

THE W. R. GARTON CO.

Electrical Mining Supplies

CHICAGO



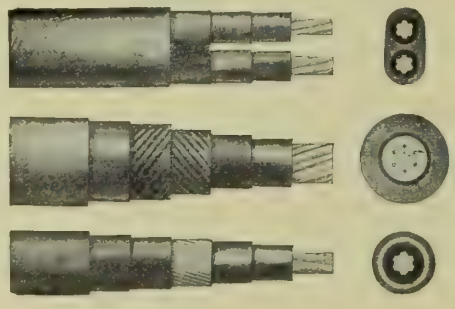
Columbia Friction Tape
for years has been the standard of quality where a Dollar's worth of Tape is desired for every dollar paid. It has splendid adhesive and insulating qualities and the price is low.

Velva Para Rubber Tape
is a Splicing Compound of high insulating resistance, is remarkably strong and long lived.

Gravity Mine Car Coupling
drop forged, slot and tongue machined, insuring a perfect fit and the maximum of strength. It is easily and quickly coupled, is always just where it is needed, and will stand any amount of abuse.

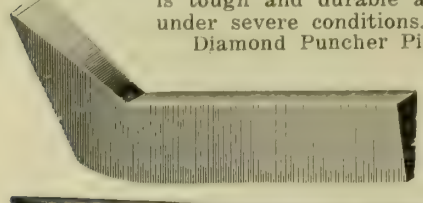
Salamander Fire-Proof Wire
The insulation on this wire is pure asbestos in the fibrous condition and is actually fire-proof. The wire is furnished on reels; or coils are made from the wire; or old coils are stripped of insulation, re-insulated and made into coils again, an economical and satisfactory process.

Mining Machine Cables
A complete line of jute and braided, steel armored and lead sheathed cables.
Also Rubber Covered and Weatherproof Wires. Quality is guaranteed.

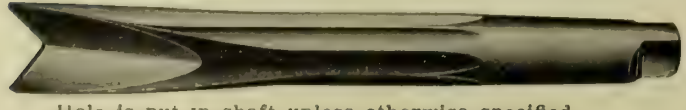


Wire Rope
Swedish iron, cast steel, plow steel, Gore construction, non-spinning hoisting rope and other special ropes. These ropes are constructed for severe usage in hoisting and haulage and for their various purposes are unexcelled.
Diamond Brand Fibre-Clad wire rope is particularly recommended in the place of manila and wire rope for transmitting power at coal washers, coal breakers, etc., for it affords protection against coal dust, acid water and moisture.

"Diamond Point" Bits
are made with chisel or pick point, from any size steel. Steel cut to length but unfinished is also furnished, the Keystone shape as well as all standard sizes. "Diamond Point" steel is tough and durable and gives long service under severe conditions.



Diamond Puncher Picks are made octagon or round, for all machines on the market. A high carbon steel is used. The points are made extra heavy.



Hole is put in shaft unless otherwise specified.

The Black Diamond Hanger
is made in both roof and expansion types. The distance from the top of the flange to the bottom of the bell is only



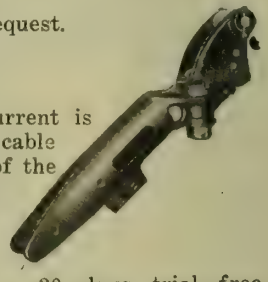
1½ inches. Therefore it is particularly desirable where head room is scarce. Ample insulation for all current carrying parts is provided. It is perfectly smooth so there is no tendency for dust or moisture to accumulate.
This line includes the Type "K" and "Little Gem" Hangers, both well known types. Also K. I. Splicing Sleeves, strain insulators, bonding sleeves, channel pins, screw clamps, type "N" clamps, and the "Sure Grip" clamp.

The "Sure Grip" Trolley Clamp
is attached to the hanger and secures the trolley wire with a vise-like grip in one operation. It is installed in one-half



the time required for any other clamp. It is made of either malleable iron or bronze. There are no loose parts. Actual service continually proves it to be more economical and satisfactory than any other clamp.
Catalog No. 14 will be sent on request.

The Holland Mine Trolley Harp
gives long lateral swivel. The current is taken from the harp through a cable connection which is cast as a part of the harp, having one large opening with two long set screws. The pole sleeve is long and is made in such a manner that the pole is firmly held and reinforced. Samples on 30 days trial free.



Other Products
Lightning Arresters; Asbestos, Sheet, Cord, Cloth, Etc.; Bolts and Nuts; Brattice Cloth; Bushings, Graphite Trolley Wheel; Carbon Brushes; Commutator Compound; Conduits, Rigid Iron, Flexible and Loom; Wire Connectors; Columbia Sand Drying Stoves; Lamps, Carbon and Tungsten; Expansion Bolts; Fuses and Fuse Plugs; Insulator Pins; Insulators, Sackett, Ben Bow, Cleats, Knobs, Tubes, Etc. Mica and Mica Products; Electrical Instruments; Switches, Knife, Snap, Push, Etc.; Telephones; Trolley Poles; Trolley Wheels; Unilets; Insulating Varnishes and Paints; Waste, Cotton and Wool; Wood Preservatives.

GENERAL ELECTRIC COMPANY

General Office: Schenectady, N. Y.

The Guarantee on Goods of Excellence Electrical

Sales Offices In All Large Cities

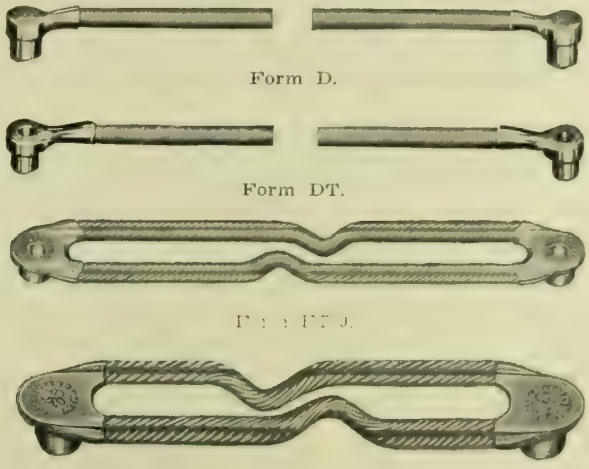
Electrial Supplies for Mines



G-E Miners' Lamp

This light, compact outfit includes a lead plate storage battery with steel carrying case, and MAZDA lamp in cap reflector.

The outfit will furnish light through a solid angle of 130° for 12 hours continuous operation.



Form D.

Form DT.

Form F-9.

G-E Railbonds

Tests in a Pennsylvania colliery showed an enormous increase in production after the installation of G-E Compressed Terminal Railbonds.

Locomotives made 18 trips per day instead of 12 as formerly with less load on the generator.



Form H.



Form H (Low).



Form A.

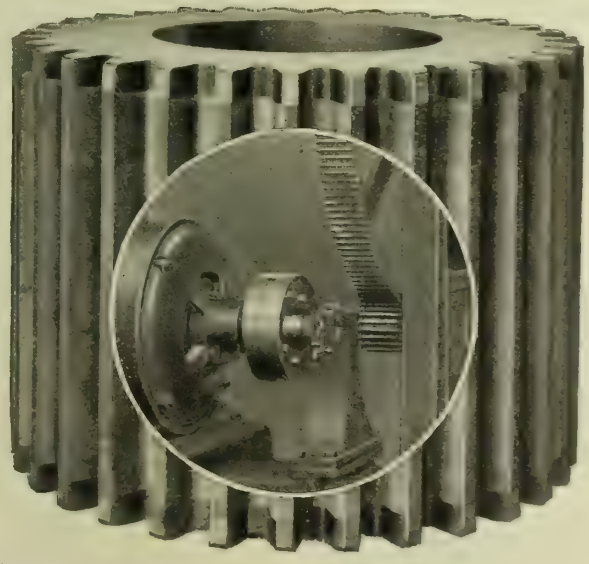


Form M.

Line Material

For overhead construction the strength and durability of G-E Line Material has been proved in actual service.

In strength, durability and ease of installation G-E Line Material is surpassed by none.



Noiseless Gearing

Fabroil Gears, are vermin proof, and oil and water proof. They do not deteriorate with age and are unaffected by atmospheric conditions.

Everything electrical for the mine is included among G-E products. Write our nearest office about your requirements.

IRON CITY ELECTRIC CO.

Electrical Supplies

PITTSBURGH, PA

Products

We have a complete line of everything Electrical for the Mine and Shop, including Ammeters and Voltmeters; Batteries, all kinds; Mine Machine Cables; Carbons and Carbon Brushes; Circuit Breakers; Trolley Clamps; Conduits; Condulets; Controllers, D. C. and A. C.; Overhead Trolley Supplies; Dynamos and Motors; Electric Lamps, Arc and Incandescent; Mine Hangers; Electric Fans; Fibre; Flash Lights; Fuses; Electric Gongs; Heavy Hardware; Trolley Harps; Headlights; Insulators and Pins; Insulated Wire and Cable; Magnet Wire; Mine Telephones; Insulating Paints and Varnishes; Recording Instruments; Rheostats; Switches and Switchboards; Transformers; Trolley Wheels; Poles.

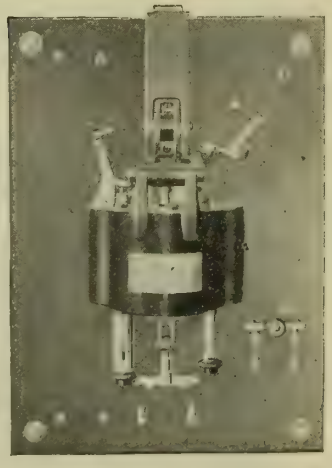
Automatic Circuit Controllers

A new form of Circuit Breaker for D. C. Circuits.

What the Automatic Circuit Controller Does

(1) Interrupts current instantly in case of short circuit or overload.

(2) Remains open a few seconds or minutes regardless of cause for opening. Time interval adjustable.



Type "A" (Closed Position)
(100-300 Amperes)

(3) At end of a short time interval breaker closes; provided, short circuit or overload has been removed.

(4) In case of short circuit breakers remain open until short circuit is removed, then closes instantly.

Used extensively in Mines, Mills and Factories.

Saves time in case of Short Circuits.

Saves money on Sub-station Operation.

Reduces Fire Hazard in Mines.

Increases Output of Mine.



Type "B" (Open Position)
(300 Amperes and Above)

These Breakers distinguish between a legitimate load condition and a short circuit condition, and are readily adjusted to open at any desired current, and to close with any desired dead load on the line.

Every branch circuit should be protected by one of these Breakers, so that trouble on one branch will not interrupt the service on other circuits.

We guarantee everything we sell, also service, quality and prices to be right. Send us your inquiries.

Le Valley-Vitae Carbon Brush Co.

Main Office and Works, 521 W. 23rd Street

NEW YORK, N. Y.

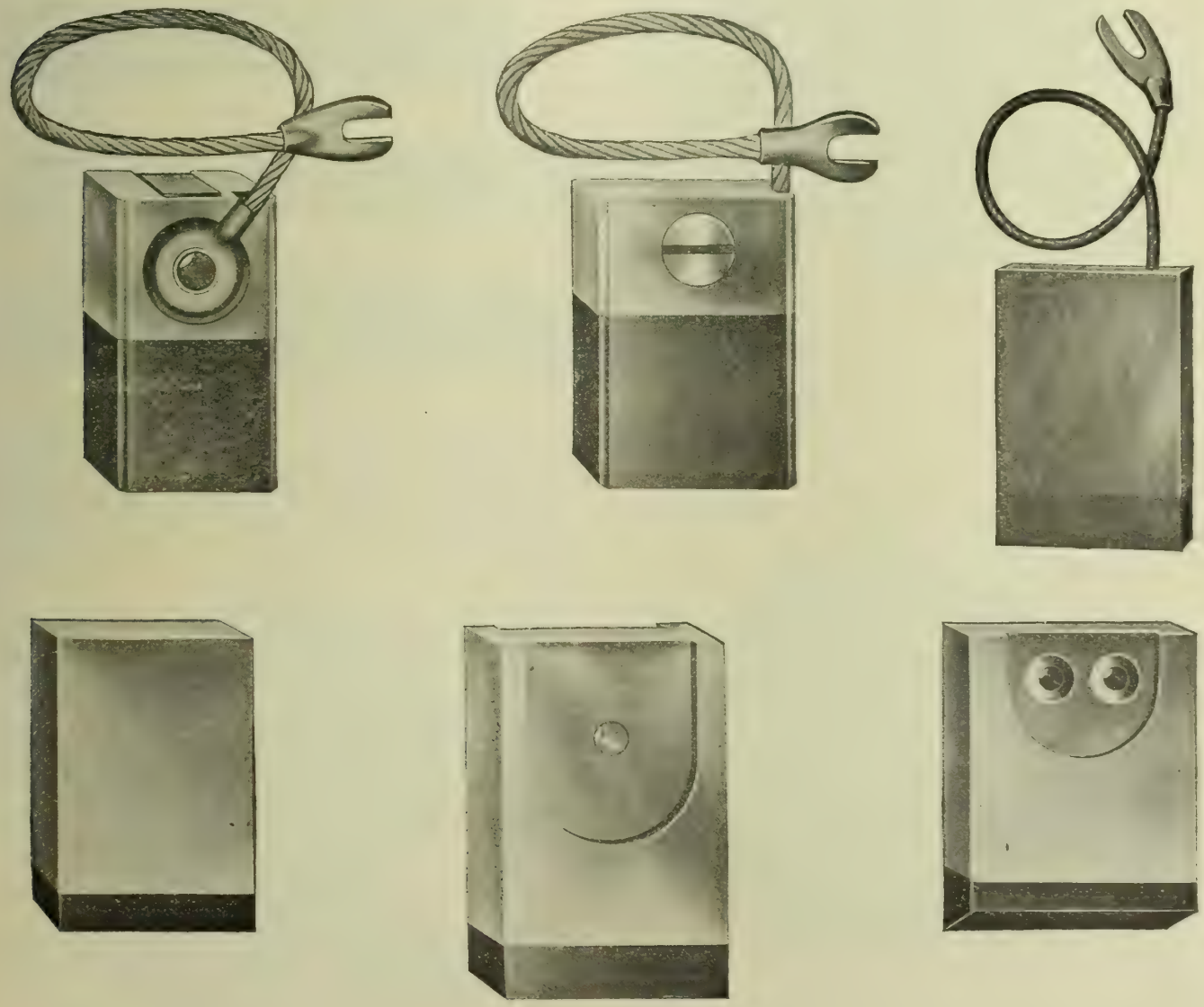
SALES OFFICES

PITTSBURGH, Westinghouse Bldg. **BIRMINGHAM**, First National Bank Bldg.
NEW ORLEANS, Hennen Bldg. **CLEVELAND**, Wade Bldg.

The selection of a carbon brush to accomplish an express result is oftentimes a difficult matter for both the designing and operating engineer.

Le Valley Brushes are now designed in grades or series in varying degrees of hardness, resistance, and current densities to meet all conditions of service. Each grade with suggestions as to its application, is fully described in a new catalog, with curves by the Electrical Testing Laboratories, New York.

It is felt that this information will be of service to users by assisting them to select the proper brush for their particular conditions.



Made up in any shape or size for any make of machine. A grade for every service.
Prompt deliveries. Trial sets furnished.

MONARCH REFILLABLE FUSE CO.

1048 Jefferson Street, Buffalo, N. Y.

Manufacturers of

Monarch Refillable Fuses

Products

We manufacture a complete line of refillable fuses.

Why Discard the Expensive Part?

In the manufacture of fuses the fuse element is the least expensive item; it is the cartridge that costs the money—why throw it away and buy a new one every time a fuse blows?

Monarch Refillable Fuses

are so constructed that when they blow, the fuse element can be replaced; making virtually a new fuse at trifling cost and in a couple of minutes.

For Instance:

1 to 30 A. 250 V. in std. pack. costs you .11 ea. Renewals, 25c per 100.

31 to 60 A. 250 V. in std. pack. costs you .18 ea. Renewals, 36c per 100.

61 to 100 A. 250 V. in std. pack. costs you .52 ea. Renewals, $1.44 per 50.

The same ratio in prices for smaller or larger sizes.

The first cost is practically the only cost. Figure out for yourself just how much this will save you each year.

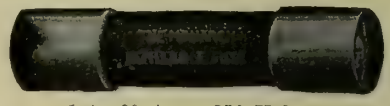
Made in all standard types and sizes and guaranteed to conform to underwriters' specifications as to rating and operating requirements.

Our system means a reduction of 75% to 90% in your fuse expense.

All Types—All Sizes

The Monarch Refillable Fuse is manufactured with ALL COPPER ends, and if you do not see the size outlined in our Bulletin Number 20 or advertising matter, simply mail in a drawing of the exact length over all, the exact diameter of the cap, the ampereage and voltage of the fuse, and when our fuse is forwarded to you, it will fit into your standard blocks without any change, or, if your fuses are special, they will fit your special blocks.

Illustrating Different Types



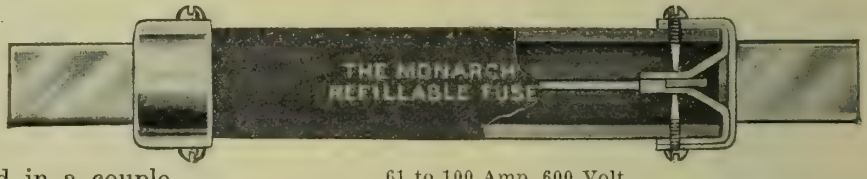
1 to 60 Amp. 250 Volt.



31 to 60 Amp. 600 Volt.



Type A. 1 to 60 Amp. 600 Volt.



61 to 100 Amp. 600 Volt.

All-Copper Ends

The Monarch Refillable Fuse is the only fuse manufactured with all-copper ends, as copper will not corrode when placed subject to moisture and gases, which are found in the mines.

Quick Detachable Ferrules

The ferrule type has the quick detachable ferrule, which is a time saver in the refilling, as time means money in keeping the electrical mine machinery in operation at all times.

Fuse Clips

If you are using the old style fuses with the type "A" contacts and would like to equip your switchboard with the National Electric Code Standard Fuse Clips, we can furnish you with the clips, and you can mount them on your switchboard. Write in for full information regarding the "Monarch" All-Copper End Fuse.

WRITE FOR BULLETIN NO. 20 BEFORE ORDERING FUSES.

THE PEERLESS ELECTRIC CO.

Warren, Ohio

Peerless Motors and Generators contain not only the best of material that money can buy, but ample quantities to insure the highest of efficiencies and working qualities. They are equipped with phosphor bronze ring oil bearings, of large proportions, perfectly ventilated armatures, commutators built of the highest grade of materials, and each machine is tested at the factory at a high voltage, to insure perfect insulation in every part.

These machines are built in all voltages and practically at any speed that the customer may require. A large stock is carried at the factory, so that almost any standard machine can be shipped immediately upon receipt of order, thus insuring the best of service and deliveries.

Information, price, etc., will be bladly furnished upon request.

Peerless D. C. Motors and Generators

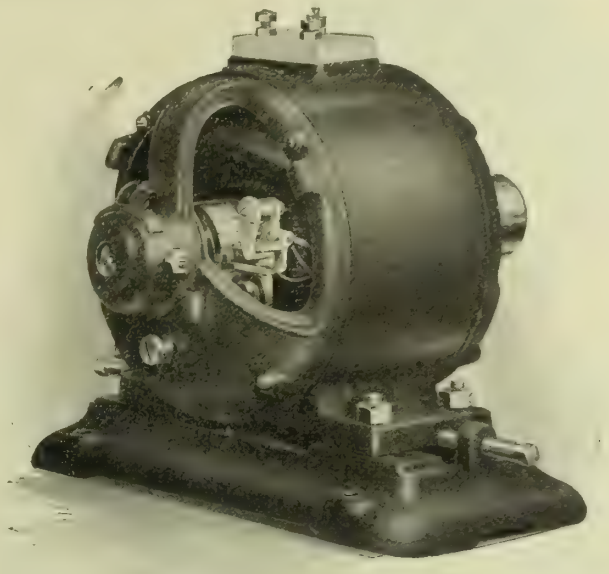
All sizes and speeds up to and including 35 H. P. Also interpole construction for variable speed duty.



Can be furnished in fully-enclosed types, for use in dirty or damp places.

Peerless D. C. Bipolar Motors and Generators

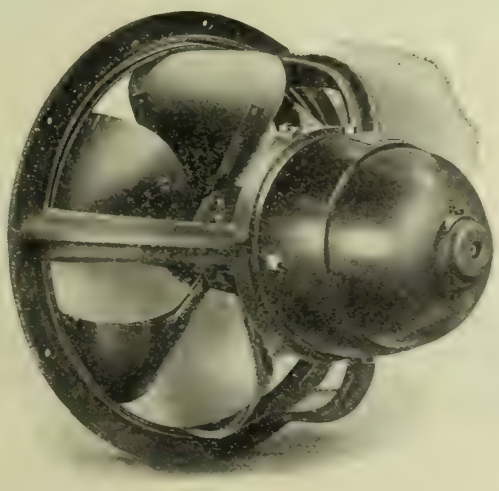
In all sizes and speeds, up to and including 1½ H. P.



Also a line of fractional H. P. one, two and three phase A. C. motors.

Peerless D. C. Exhaust Fans

Furnished in all sizes, from 12″ to 48″, inclusive. Equipment from 18″ to 48″ includes fully-



enclosed motor and speed controller, giving 50% reduction in speed.

Constant Speed Exhaust Fans, in sizes from 12″ to 24″, are also furnished in single phase A. C.

JOHN A. ROEBLING'S SONS CO.

MANUFACTURERS OF

WIRE

TRENTON, N. J.

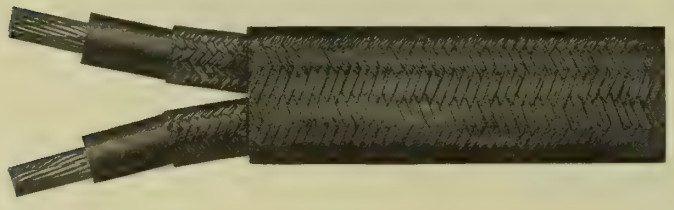
Also CHICAGO, PHILADELPHIA, PITTSBURGH, CLEVELAND, ATLANTA,
John A. Roebling's Sons Co., of New York, New York.
John A. Roebling's Sons Co., of California.
SAN FRANCISCO, LOS ANGELES, SEATTLE, PORTLAND, ORE.

Products

Roebling wires include iron, steel and copper wire in round, flat and special shapes. Wire for mine telephones and every kind of wire or cable needed in the elctrical equipment of mines is made at the Roebling works with careful attention given to materials and workmanship.

Mining Machine Cables, Duplex

Duplex mining machine cables are made with flexible strands. The rubber insulation is N.E.C.S.



thickness. Each conductor is furnished with a weatherproof braid, then laid side by side and covered with two or three braids of hard heavy cotton finished with a weatherproof compound.

Mining Machine Cables, Concentric Construction "A"

This type of cable has a flexible strand insulated with rubber 1/64" thicker than N.E.C.S. This center is covered with a tape and braid. Fine wires are placed over the covered center, the area of the wires being equal to that of the center conductor.

A belt of rubber 1/64" less than that on the inner



conductor is then applied and the whole cable finished with a tape and a heavy double braid, weatherproofed.

Concentric Construction "B"

This is the same as construction "A" but without the outside belt of rubber.

Locomotive Cable

Locomotive cables are used to conduct current to electric locomotives in mines where the track extends beyond the trolley wire. The conductor is flexible with N.E.C.S. thickness of rubber insulation over which there are two extra heavy tough weatherproof braids.

Fireproof Wire

The strand of fireproof wire is flexible. The insulation is a braid of cotton, specially treated, and a fininshing braid of asbestos. Both braids are heavily impregnated with our special fireproof paint.

Slow Burning Wire

The conductor of slow burning wire may be solid, stranded or flexible. The insulation is three braids of cotton thoroughly impregnated with our special fireproof paint.



Magnet Wire

We carry in stock at our works and branch warehouses a full stock of magnet wire. This includes single and double cotton covered, single and double silk covered, asbestos and single cotton covered, enameled wire, enameled and single silk and enameled and single cotton covered wires.



Brewery Cord

This cord has weather proof braids on each conductor making it suitable in all damp places for incandescent lighting.

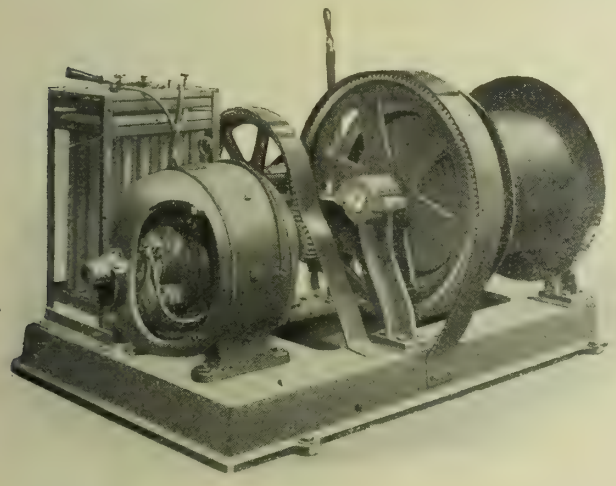
THE SACKETT MINE SUPPLY CO.

Main Office and Factory, Columbus, Ohio
SALES OFFICE, WELCH, W. VA.
Supplies for Morgan-Gardner Machinery.
General Electric Motors, Skinner Engines

Electrical Construction, Supplies and Repairs

Products

Electric Hoists, Mine Fans, Line Material, Insulators, Trolley Wheels, Trolley Harps, Armature Rewinding, Rebuilding and Repairing of Electrical Machinery; Machinists.

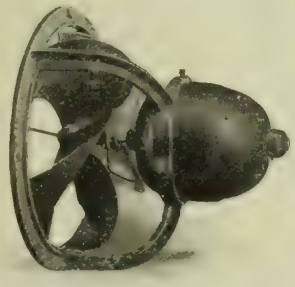


"SACKETT" Single Drum Electric Hoists. Sizes 5 H. P. to 60 H. P. Send for "Pamphlet R."

Mine Fans

either belt driven, or direct connected to motors. Put your ventilation problems up to us.

Forge Blowers, Exhaust Fans, Volume Blowers.





Sackett Type "A" Insulator

An improved device for supporting feed wires in Coal Mines. Consists of malleable iron pin and white vitrified porcelain knob. Is self-draining, has no springs, washers or other small parts, is easily put up and taken down. The porcelain knob locks securely on the pin which is 8½ in. long. The knob is 2½x2 in, with ¾ in. groove —large enough for 4-0 bare wire or cable. Total weight 1¼ lbs. Ask your dealer.

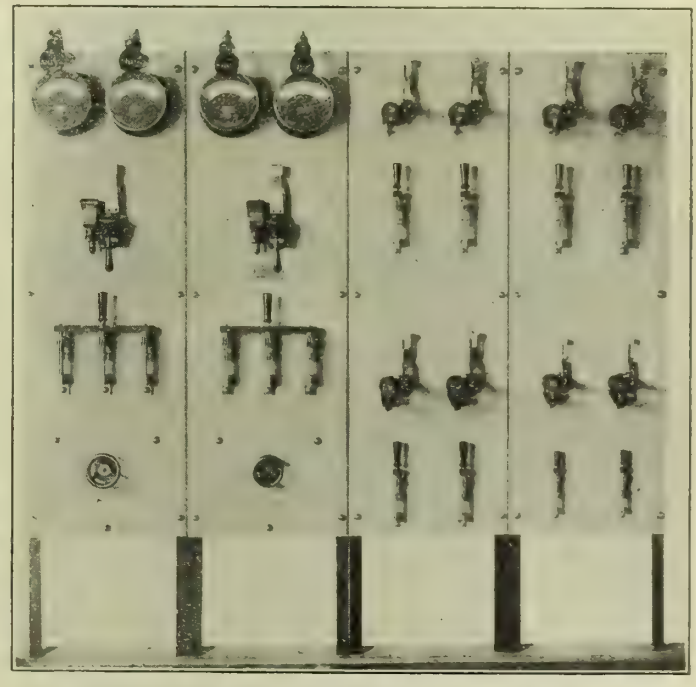
Sackett "Heavy Type" Trolley Wheel

These wheels will out-wear three of the ordinary wheels and the rims cannot be cut or worn off.



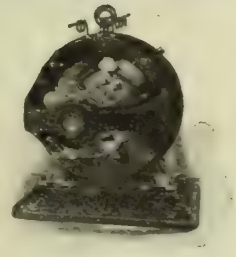
We Build Switch-Boards

for every condition of power and lighting service for coal mines and factories. Over 800 panels have been built by us for coal mining plants.



We supply a large number of different forms of motors and controllers to meet the varied requirements of coal mine and factory service, both direct and alternating current motors for belted, geared, silent chain or direct connected drives for continuous or intermittent load, constant or variable speed.

We will be pleased to supply engineering data and recommendations as to the type and form of motor best adapted to customers' conditions.



Electrical Repairs

Our plant which covers 22,500 square feet of floor space, contains a finely equipped Rewinding Shop, and Machine Shop with every facility for repairing or rebuilding Mining Machinery. Quick servicce, good workmanship and reasonable prices guaranteed.

Screen Bars and Bearing Bars in stock.

STANDARD UNDERGROUND CABLE CO.

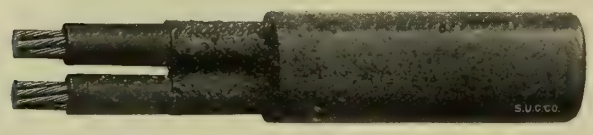
PITTSBURGH, PA.

Boston New York Philadelphia Pittsburgh St. Louis Chicago San Francisco

Manufacturers of

Copper Wire and Cables, Bare or Insulated, for Mine Work, and Lead-Covered Cables to Meet All Requirements of Service and Mining Laws

Mining Machine Cable—Flat Duplex



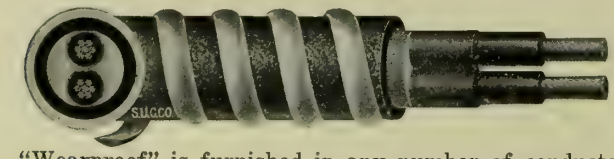
Two flexible conductors each insulated with rubber and braided, conductors laid flat, with two or three tough protecting braids over all.

Concentric Duplex—Construction A



Flexible inner conductor rubber insulated and braided, outer conductor laid thereover, with rubber insulation and two tough protecting braids over all.

"Wearproof"



"Wearproof" is furnished in any number of conductors, but usually in duplex cable in one of the two following styles:

(1) Flexible conductors separately rubber insulated and braided, twisted together, and further protected with one or more saturated braids and a spirally wound steel armor.

(2) Concentric Duplex, same as Construction A cable except with an additional protection of a spirally wound steel armor.

"Wearproof" Mining Machine Cable is strong, durable, withstands abrasion, does not kink, and reduces cable troubles.

Gathering Locomotive Cables

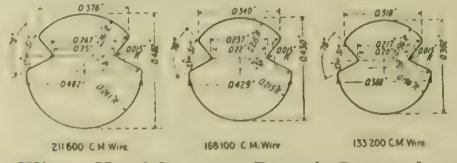


Flexible conductor rubber insulated, protected by one or more tough braids. This cable, as constructed, is flexible, strong and durable.

Magnet Wire

Round, square and rectangular shapes—insulated with asbestos, cotton or silk. Standard sizes from stock.

Bare Copper Wire and Cable



Trolley Wire—Hard Drawn—Round, Grooved or Figure 8. Transmission Wire—Solid or Strand—Hard Drawn, Medium Hard or Soft Wire. Soft Wire for Bonding Purposes.

BORE HOLE CABLES.

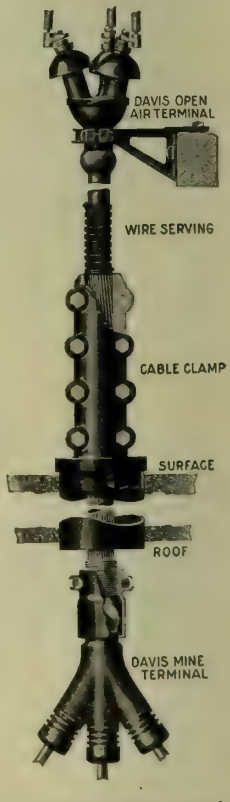
For all conditions of service, usual voltages, number of conductors, sizes of conductors—armored and unarmored.

During the past years we have given a great deal of time and attention to this subject. Our very extensive experience in the manufacture of cables for this service has given us a large amount of valuable information, and we are glad to make recommendations and furnish estimates to those interested in these cables.

Lead-Covered Steel-Wire-Armored Cables

These cables resemble the ordinary wire-armored cables, but their construction is modified to take care of the longitudinal strains to which they are subjected when installed in the bore hole.

The wire-armored cables are designed to be suspended from the top of the hole by means of a sheave, or cable clamp, which latter method is shown in the illustration. With our improved method of applying the armor, and the suggested method of support, the strain is evenly distributed throughout the entire length of cable.



Lead-Covered Steel-Wire-Armored Cable installed in bore hole, complete with supporting clamp and terminals.

Plain Lead-Covered (Non-Armored) Cables

These cables, as in the case of the wire-armored cables, are modified to withstand the longitudinal strains due to vertical suspension. Before installation in the bore hole they are usually attached to one or two non-corrosive supporting strands which are in turn attached to suitable fastenings above the hole, and support the cable every few feet. Lead-covered, non-armored cables are not recommended for installation in very deep holes.

Non-Leaded Cables

We are prepared to furnish non-leaded cables for installation in bore holes when desired, and where conditions permit their use. The outer braid may be as ordinarily furnished on braided cables, or may be our heavy **Circular Loom** finish.

Cable and Cable Accessories for Bore Hole Cable Installations furnished complete.

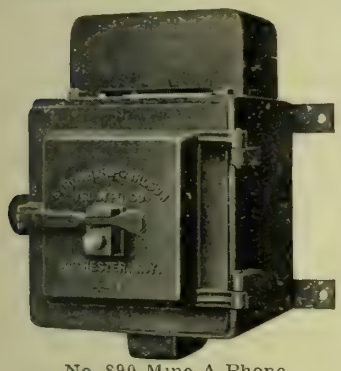
STROMBERG-CARLSON TELEPHONE MFG. CO.

ROCHESTER, NEW YORK, U. S. A.

CHICAGO ILLINOIS TORONTO, CANADA

MINE-A-PHONE MINE-A-PHONE

The design of the Stromberg-Carlson Mine-A-Phone is the result of a thorough and extensive study of mine conditions and includes suggestions of many experienced mine engineers. No other telephone so completely meets the needs of underground service. It is a real mine telephone—built for the mine and not adapted to it.



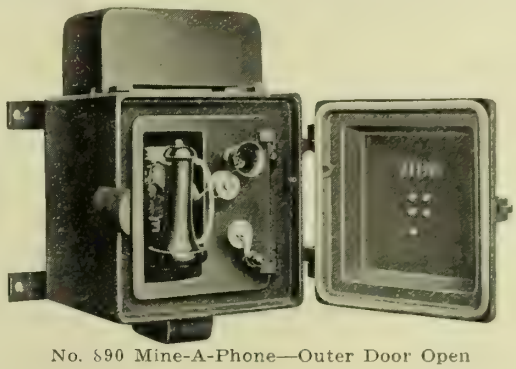
No. 890 Mine-A-Phone
Closed View

The No. 890 Mine-A-Phone consists of complete self-contained magneto telephone equipment arranged in a comparatively small iron case, finished in a black waterproof and acid-repellant enamel. The talking and signaling apparatus is placed within the inner compartment, where it is protected from moisture and gas and yet can be readily inspected or removed when necessary.

The door to the inner compartment is protected against the entrance of moisture by a wide overlap of felt, and the door is fastened shut by four machine screws. All openings through the inner case, such as required for the generator crank shaft, are protected by gaskets and packing.

The ringer is so arranged that the coils are inside the inner compartment, but the armature is outside the case and no holes remain through which water can enter the case. The ringer gongs and armature are protected by a cast iron dome which has an opening around its base through which the sound can be heard. The inner compartment need only be opened for the replacement of batteries, and this is seldom necessary.

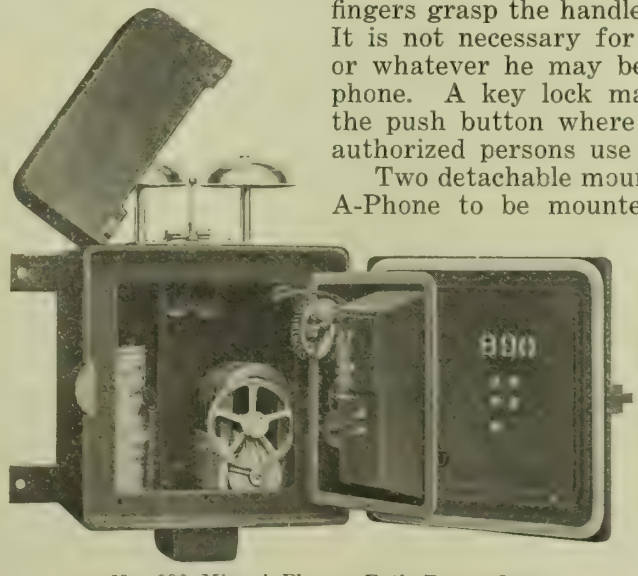
When the outer door is opened the receiver, weather-proof linen cord, take-up device, transmitter mouthpiece and generator crank handle are exposed. The take-up device automatically takes up the slack in the receiver cord so that it will not be injured in the hinges of the outer door. The outer door is equipped with a rubber gasket, which renders the entire Mine-A-Phone water-proof, gas-proof and acid-proof when the door is closed. The case is high grade iron casting and will withstand fire and explosion. All coils are specially treated to resist moisture and all metal parts are protected by enamel or zinc plating.



No. 890 Mine-A-Phone—Outer Door Open

A feature that has recently been added to the Mine-A-Phone is the new push button lock on the outer door. This lock requires the use of but one hand to open it. Simply pressing the palm of the hand against the button releases the catch, the fingers grasp the handle and the door swings open. It is not necessary for a miner to drop his tools or whatever he may be carrying to use the telephone. A key lock may be supplied in place of the push button where it is desired to have only authorized persons use the Mine-A-Phone.

Two detachable mounting bars permit the Mine-A-Phone to be mounted on almost any surface. The auctual dimensions of the No. 890 Mine-A-Phone are 10¾″ high x 10″ wide x 8½″ deep.



No. 890 Mine-A-Phone—Both Doors Open
Note Gaskets on Doors and Accessible Arrangement of Equipment

Mine-A-Phone layouts, including circuit arrangements, types of surface telephones and switchboards, are furnished for each mining system as required. Write for Bulletin No. 1000, which clearly explains the Mine-A-Phone system in detail.

G. W. SULLIVAN & CO.

Cincinnati, Ohio

Telephone Canal 3608 118-122 OPERA PLACE

Electrical Repairs

Products

Our specialty is the repairing of electrical machinery of all types and classes. Special attention is given to mining apparatus.

Armature Rewinding; Commutators Refilled and Reinsulated.

We send men to your plant to do repair jobs.

We handle Second Hand Motors, Dynamos, Generators, etc.

Distributing Agents in this district for the Corliss Carbon Brush Factory, Bradford, Pa.

Our Shop

is the largest and best equipped of any similar institution in Cincinnati. It occupies 3400 sq. ft. of floor space and is equipped with the most approved makes and types of machine tools, also special tools, for turning up large direct connected commutators at your plant without removing armature from Generator. Our shop system is so arranged that any job coming to us will be handled in a quick, efficient manner, thus insuring quick delivery to hurry-up jobs.

Workmanship

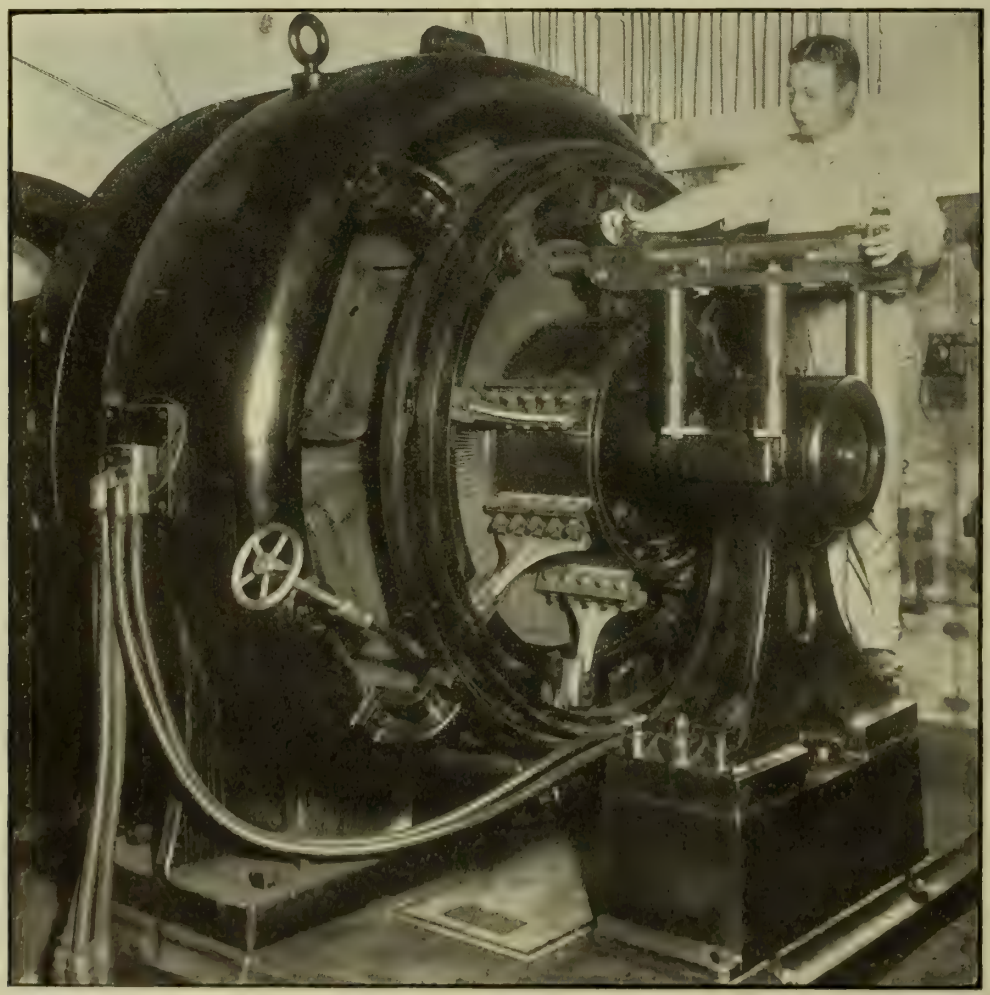
We employ only skilled electricians and mechanics—under the direct supervision of G. W. Sullivan. Our customers have the satisfaction and assurance of knowing that every repair job that goes out of this shop is done right, and is backed up by our guarantee.

References

We can point with pride to our many customers who have sent us their work year after year.

We can refer you to the Cincinnati office of the General Electric Co.; Colonial Coal & Coke Co., Prestonsburg, Ky., Central Coal & Iron Co., Central City, Ky.; Ducktown Sulphur Copper & Iron Co., Isabella, Tenn.; Kentucky Utilities Co., Somerset, Ky.; North Jellico Coal Co., Wilton, Ky.; Ashland Fire Brick Co., Ashland, Ky.; General Refractories Co., Olive Hill, Ky.; Indian Creek Coal Mining Co., Bicknell, Ind.; Miama Coal Mining Co., Clinton, Ind.

"SULLIVAN WILL DO IT RIGHT."



Illustrating our Special Turning Tool Mounted on 200 k. w. Direct Connected Generator, Ready for Turning up Commutator.

UNION ELECTRIC COMPANY

Electrical Supplies of All Kinds

PITTSBURGH, PA.

The following partial list will give an idea of the wide and varied line of supplies we handle. We cannot, of course, begin to list here our complete line, but in a few words will say that we are in position to furnish anything and everything in the electrical supply line for mines and largely from our Pittsburgh stock.

Products

Mine Locomotive Headlights,
Gears and Pinions,
Mine Locomotive Trolleys,
Mine Hangers,
Expansion Bolts,
Trolley Splicers,
Trolley Crossings,
Electric Rock Drills,
Bo-arrow Cross Arms,
Insulating Paints,
Babbitt Metal,
Commutator Cement,
Track Drills,
Jacks,
Mine Feed Wire Insulators,
Electric Mine Lamp Bulbs,
Carbon Brushes,
Trolley Pole Heads and Harps,
Trolley Wheels,
Flexible Couplings,
Clamping Ears,
Trolley Frogs,
Section Insulators,
Pierce Specialties,
Lightning Arresters,
Bond Testers,
Automatic Cable Clamps,
Third Rail Insulators,
Gongs,
Eveready Flashlights,
Holophane Reflectors,
Rail Bonds,
Pulmotors,
Helmets,
General Wiring and Lighting Supplies.

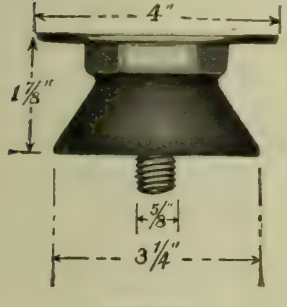
Nuttall Gears, Pinions, Trolleys and Trolley Parts



Nuttall Gears and Pinions for haulage locomotives, mining machines, pumps,—in fact, gearing of any standard or special design.

General Electric Railbonds and Overhead Line Material.

Quality established and prices right; railbonds for every condition—either pin driven or solid terminals. Our new type combination low mine hangers (see cut) will take care of installations in coal, on timber or on pipe brackets by using with it our expansion bolts, hanger lag screws or combination pipe clamps. Our mechanical Trolley Clamp is far better than any other type. Write for descriptive bulletin or samples.





Fort Wayne Electric Rock Drill

This type of drill is being used by a great number of mine owners and is considered the standard. The expense of maintenance and current consumption are both very low and it will prove satisfactory in any rock encountered in a coal mine. Communicate with us if you have any rock faults and we will demonstrate its superiority over any other make of drill on the market. Write for testimonial letters and bulletin. See full page add on page 390.

Insulating Material for Repair Work

A large stock of all kinds of insulating material is carried by us in Pittsburgh. Send for our insulating paint and varnish catalog which shows the proper paint or varnish to be used for all classes of insulating work.

Crouse-Hinds Headlights

of every description, Arc, Incandescent, and Luminous. Write for literature on later types of Luminous Headlights. Furnished on trial basis.



Draeger Pulmotors and Helmets

Considered purely as an investment, the Pulmotor will bring most important benefits in confidence and good will on the part of your employees. As a "Safety First" factor, it is unquestionably an essential part of your equipment. These features are also true of the Emergency or Regular type Helmets. Send for detail bulletins.

WESTERN ELECTRIC COMPANY

Manufacturers of the 8,000,000 "Bell" Telephones

New York	Atlanta	Chicago	Kansas City	San Francisco	Montreal	London
Buffalo	Richmond	Milwaukee	Omaha	Oakland	Toronto	Paris
Philadelphia	Savannah	Indianapolis	Oklahoma City	Los Angeles	Winnipeg	Berlin
Boston	New Orleans	Detroit	Denver	Salt Lake City	Calgary	Antwerp
Pittsburgh	Houston	Cincinnati	Minneapolis	Seattle	Vancouver	Milan
Cleveland	Dallas	St. Louis	St. Paul	Portland	Edmondton	Rome

Johannesburg Sydney St. Petersburg Vienna Buenos Ayres Tokyo

Equipment for Every Electrical Need

Western Electric

Mine Telephones

The modern mine telephone, as made by the Western Electric Company, fulfils the requirement of a "protected telephone". All apparatus is enclosed in a substantial cast iron case, heavily japanned inside and outside and equipped with two doors. This combination makes the set fireproof and moisture-proof when closed. The iron case is also curved at the top so that water or any other foreign matter falling upon it will easily slip off. The line wires may be brought in either at the top or bottom of the case. When brought in at the top, the wires run in through a curved inlet which works as a drip loop to prevent water from entering the set.



No. 1336-E Telephone Outer Door Closed

The outer door protects the transmitter mouthpiece, receiver and generator crank, the only parts visible when this door is opened, while the second or inner door protects all the apparatus within the case. Electrically, the set contains practically the same apparatus as the familiar magneto telephone. Here, however, the resemblance ceases as the mechanical features are entirely different. Besides being encased in a cast iron box, every piece of apparatus is individually and thoroughly treated to protect it against the inroads of moisture and corrosive mine water gases.

The generator springs are covered with asphaltum paint. The generator terminals are mounted on a hard rubber block and after connections are made, they are covered with a waterproof compound. Switch-hook springs and ringer terminals are covered with asphaltum paint and compound respectively. The induction coil is mounted in a hard wood case whose parts are boiled in linseed oil before they are assembled. These boxes are not glued but are fastened by means of brass screws, while the spaces between the sides and the induction coil are filled with water-proof compound.



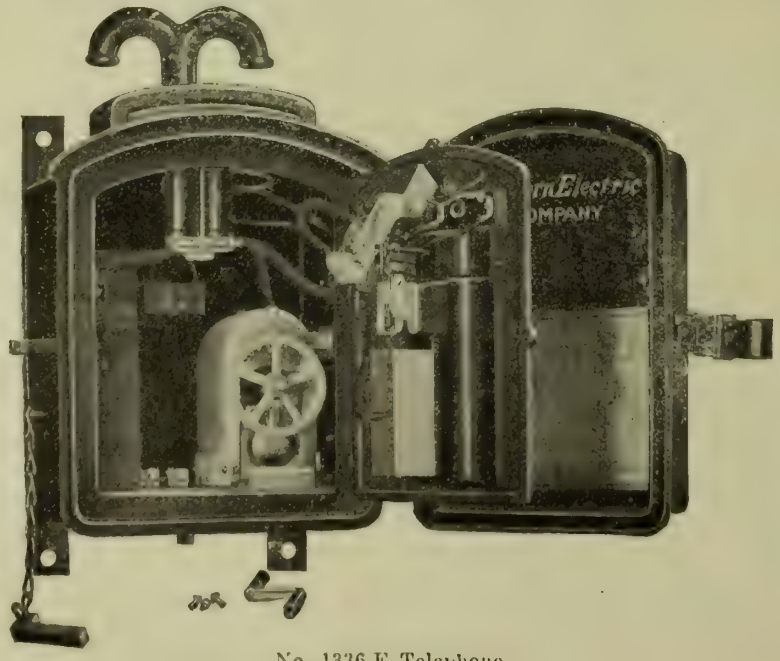
No. 1336-E Telephone Outer Door Open

To prevent battery trouble, the cardboard cartons are thoroughly impregnated with water-proofing compound to prevent the absorption of moisture which would otherwise short circuit adjacent shells. To safeguard the batteries still further and prevent them from coming into contact, circular holes, each large enough for one cell, are provided in the wooden block under the batteries.

All wiring is done with Habirshaw red rubber core cable, fastened with insulating tape and treated with asphaltum paint. Every exposed iron part is triple electro-galvanized.

In the construction of this telephone, the Western Electric Company has exercised the same insight into operating conditions and the same care in design and manufacture that have made its telephones the standard for the world.

Write for catalog bulletin No. 10.



No. 1336-E Telephone Both Doors Open

WESTERN ELECTRIC COMPANY

Manufacturers of the 8,000,000 "Bell" Telephones

New York	Atlanta	Chicago	Kansas City	San Francisco	Montreal	London
Buffalo	Richmond	Milwaukee	Omaha	Oakland	Toronto	Paris
Philadelphia	Savannah	Indianapolis	Oklahoma City	Los Angeles	Winnipeg	Berlin
Boston	New Orleans	Detroit	Denver	Salt Lake City	Calgary	Antwerp
Pittsburgh	Houston	Cincinnati	Minneapolis	Seattle	Vancouver	Milan
Cleveland	Dallas	St. Louis	St. Paul	Portland	Edmonton	Rome

Johannesburg Sydney St. Petersburg Vienna Buenos Ayres Tokyo

Western Electric

Equipment for Every Electrical Need

General

The Western Electric Company is prepared to furnish "equipment for every electrical need" in the mine. One of the many branch houses is near your mining property. Stocks of everything electrical are constantly maintained in order to give customers the very best kind of service on emergency or other orders.

Every line of electrical supplies which is offered by us is the best of its kind and carries with it the same guarantee that covers all Western Electric apparatus.

The following are some of the complete lines carried in our stocks:

Car Parts

Under the head of "car parts" are included standard trolley poles, trolley harps, wheels, headlights, lamps, circuit breakers, rheostats, delabeston field and armature coils, commutator parts, brushes and brush holders.



Commutators.

All car parts are designed and built for long service. Their use guarantees low maintenance costs. .

Motors

Electric motors can be furnished for every phase of mine work—for cars, hoists, pumps, crushers and exhaust fans. They can be supplied for either direct or alternating current. They are built under the most comprehensive specifications and every step in manufacture is conducted under rigid inspections. Western Electric motors require a minimun of maintenance for a maximum of service.



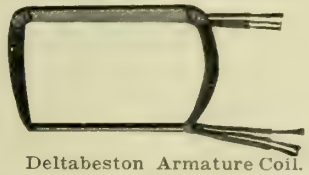
Western Electric Motor

Magnet Wire

Enamel coated, cotton or silk covered magnet wire of high conductivity is carried in stock in large quantities to meet any demand. This type of wire will satisfactory fulfill all ordinary requirements.

Deltabeston Magnet Wire

This is a flexible, fire and moisture proof wire particularly adapted to field and armature coil winding. The insulation is an asbestos composition which adapts it for use where overloads are frequent and severe. Square and rectangular Deltabeston wire makes it possible to put a greater cross-section of copper into a given winding space than round conductors.



Deltabeston Armature Coil.

Mining Machine Cable

Duplex mining machine cable consists of flexible strands, rubber insulated. Each conductor is finished with a waterproof braid. Two conductors are then laid parallel and covered with two or three braids of hard cotton, which is then thoroughly waterproofed.

D. & W. Fuses

These fuses are designed for accuracy and safety. They meet every requirement of the National Electric Code and can be relied upon to withstand great mechanical strains and the severest electrical conditions.

Mica

Both cut and uncut mica of the highest grade can be furnished in any quantity for insulating purposes.

Headlights

The complete line of Crouse-Hinds headlights will meet any requirement of mine car service. These headlights produce a brilliant, darkness-piercing light.

Graphite Lubricating Bushings

For insuring oil-less lubrication, the line of "Bound Brook" bushings will be found most efficient.

Car Supplies

This classification includes the most representative specialties made, such as Samson cordage, Kalamazoo trolley wheels and harps, and Shelby trolley poles. Insulating tapes, cloths, compounds and other supplies can also be furnished.

WESTINGHOUSE ELECTRIC & M'F'G CO.

EAST PITTSBURG, PA.

Westinghouse Line Material for Mines

WESTINGHOUSE SALES OFFICES

Atlanta, Ga.	Charlotte, N. C.	Denver, Colo.	Knoxville, Tenn.	New York, N. Y.	Salt Lake City, Utah.
Baltimore, Md.	Chicago, Ill.	Detroit, Mich.	Louisville, Ky.	Omaha, Neb.	San Francisco, Cal.
Birmingham, Ala.	Cincinnati, Ohio.	*El Paso, Tex.	Los Angeles, Cal.	Philadelphia, Pa.	Seattle, Wash.
Bluefield, W. Va.	Cleveland, Ohio.	*Houston, Tex.	Memphis, Tenn.	Pittsburgh, Pa.	Spokane, Wash.
Boston, Mass.	Columbus, Ohio.	Indianapolis, Ind.	Milwaukee, Wis.	Portland, Ore.	Syracuse, N. Y.
Buffalo, N. Y.	*Dallas, Tex.	Joplin, Mo.	Minneapolis, Minn.	Rochester, N. Y.	Tacoma, Wash.
Butte, Mont.	Dayton, Ohio.	Kansas City, Mo.	New Orleans, La.	St. Louis, Mo.	Toledo, Ohio.
Charleston, W. Va.		*M. E. & M. Co. of Texas.			Washington, D. C.

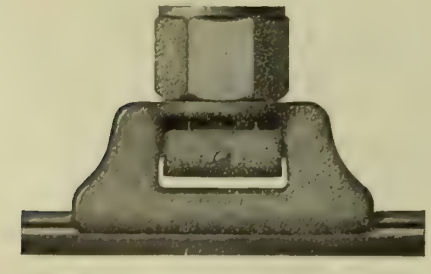
Westinghouse Suspensions and Clamps

(All Metal Parts Sherardized)

The Westinghouse Electric and Manufacturing Company manufactures not only a complete line of suspensions, ears, splicers, insulators, rail bonds; pole line hardware, and other line material for outside work, but also special devices designed particularly for mine work.



Type BF-1, Style 207352.
Test Voltage=10,000 Volts. Ult. Strength=6000 lbs.
Height=1 7/16 inches. Diameter=3 1/4 inches.



Type RE Mine Clamp, Weight 11 oz.
Average Ult. Holding Power, Vertical Pull, 4/0 grooved wire 1450 lbs. Average Ult. Holding Power, Side Pull, 4/0 grooved wire=1200 lbs. Height=2 1/4 inches.

The insulating material used is made at our East Pittsburgh Works. It is moisture-proof, heat resistant and of high mechanical and dielectric strength. It is moulded into shape under great pressure, so that it is very dense and capable of resisting heavy strains.

All malleable-iron and steel parts are sherardized, absolutely preventing oxidation.



Type BL-3, Style 207353.
Test Voltage=10,000 Volts. Ult. Strength of Supporting Arms, 3500 lbs. Height=1 7/16 inches. Diameter=3 1/4 inches.

Strength and Durability

Strength and durability are what you want in line material. These qualities are found to the greatest degree in the devices illustrated.

A new and improved insulating compound, **"Westinghouse No. 116,"** is the standard for holding the stud in the body of the suspension. This compound has the greatest mechanical and dielectric strength consistent with reasonable cost. When desired Bakelite insulation will be substituted at a slightly increased cost.



EXPLOSIVE SECTION

Engineering Data

Definition of Permissible Explosives.
Classes of Permissible Explosives.

List of Permissible Explosives and Manufacturers.

The following manufacturers have catalogue descriptions in this section:

Aetna Explosives Co., Inc.
Atlas Powder Co.
Austin Powder Co.
Ball Grain Explosives Co.
Burton Powder Co.
E. I. duPont de Nemours Powder Co.
Fort Pitt Powder Co.
Hercules Powder Co.
King Powder Co.
Miners' Supply Co.
United States Powder Co.

For additional descriptions of Explosive Materials, not appearing in this section, refer to Index of Products in front of book.

Definition of Permissible Explosives

An explosive is called a permissible explosive when it is similar in all respects to the sample that passed certain tests by the United States Bureau of Mines, and when it is used in accordance with the conditions prescribed by this bureau.

But even the explosives that have passed those tests and are named in this list as permissible explosives are to be considered as permissible explosives only when used under the following conditions:

1. That the explosive is in all respects similar to the sample submitted by the manufacturer for test.

2. That detonators—preferably electric detonators—are used of not less efficiency than those prescribed, namely, those consisting by weight of 90 parts of mercury fulminate and 10 parts of potassium chlorate (or their equivalents).

3. That the explosive, if frozen, shall be thoroughly thawed in a safe and suitable manner before use.

4. That the quantity used for a shot does not exceed 1½ pounds (680 grams), and that it is properly tamped with clay or other non-combustible stemming.

It must not be supposed that an explosive that has once passed the required tests and has been published in lists of permissible explosives is always thereafter to be considered a permissible explosive, regardless of its condition or the way in which it is used. Thus, for example, an explosive named in the permissible list, if kept in a moist place until it undergoes a change in character, is no longer to be considered a permissible explosive. If used in a frozen or partly frozen condition, it is not when so used a permissible explosive. If used in excess of the quantity specified (1½ pounds), it is not, when so used; a permissible explosive. And when the other conditions have been met, it is not a permissible explosive if fired with a detonator of less efficiency than that prescribed.

Moreover, even when all the prescribed conditions have been met, no permissible explosive should necessarily be considered as permanently being a permissible explosive, but any permissible explosive when used under the prescribed conditions may properly continue to be considered a permissible explosive until notice of its withdrawal or removal from the list has been officially published, or until its name is omitted from a later list published by the Bureau of Mines.

Furthermore, the manufacturers of a permissible explosive may withdraw it at any time when introducing a new explosive of superior qualities. And after further experiments and conferences the Bureau of Mines may find it advisable to adopt additional and more severe tests to which all permissible explosives may be subjected, in the hope that through the use of such explosives only as may pass the more severe tests, the lives of miners may be better safeguarded.

LIST OF PERMISSIBLE EXPLOSIVES.

Subject to the conditions and provisions stated above, the following explosives are classed as permissible explosives:

Permissible explosives tested prior to March 1, 1915.

Brand.	Class designation.	When used with detonators, preferably electric detonators, of not less efficiency than—	Unit deflective charge.	Rate of detonation in 1¼ by 8 inch cartridge.		Manufacturer.
			Grams.	*Feet per second.*	*Meters per second.*	
Aetna coal powder A [1]	Class 4	No. 6	277	12,620	3,848	Aetna Explosives Co. (Inc.), New York, N. Y.
Aetna coal powder AA [1]	Class 1*a*	do	241	7,880	2,403	Do.
Aetna coal powder B [1]	Class 4	do	301	9,870	3,008	Do.
Aetna coal powder C [1]	do	do	344	7,010	2,138	Do.
Aetna coal powder No. 2 [1]	Class 1*a*	do	212	9,280	2,830	Do.
Bental coal powder No. 1–A [2]	do	do	278	7,690	2,343	Hercules Powder Co., Wilmington, Del.
Bental coal powder No. 2 [2]	do	No. 7	276	4,750	1,447	Do.
Bental coal powder No. 2–X [2]	do	No. 6	280	7,980	2,432	Do.
Bituminite No. 1	Class 4	do	318	12,800	3,901	Jefferson Powder Co., Birmingham, Ala.
Bituminite No. 3	do	do	294	9,330	2,843	Do.
Bituminite No. 4	do	do	301	7,540	2,298	Do.
Bituminite No. 5	Class 1*a*	do	231	9,120	2,782	Do.
Black Diamond No. 2–A	Class 4	do	281	12,600	3,842	Illinois Powder Manufacturing Co., St. Louis, Mo.
Black Diamond No. 3–A	do	do	294	11,160	3,402	Do.
Black Diamond No. 5	Class 1*a*	do	288	6,020	1,835	Do.
Black Diamond No. 6–L. F.	Class 4	do	306	9,630	2,935	Do.
Black Diamond No. 7	Class 1*a*	do	214	10,730	3,270	Do.
Black Diamond No. 8	Class 4	do	295	8,730	2,663	Do.

[1] Manufacture by Aetna Explosives Co. (Inc.), authorized under date of Dec. 31, 1914. [2] Manufacture by Hercules Powder Co., authorized under date of June 12, 1914.

Permissible explosives tested prior to March 1, 1915—Continued.

Brand.	Class designation.	When used with detonators, preferably electric detonators, of not less efficiency than—	Unit deflective charge.	Rate of detonation in 1¼ by 8 inch cartridge.		Manufacturer.
			Grams.	*Feet per second.*	*Meters per second.*	
Cameron mine powder No. 1-A	Class 1*a*	No. 6	227	10,950	3,339	Cameron Powder Manufacturing Co., Emporium, Pa.
Cameron mine powder No. 2-A	do	do	230	[1] 10,520	3,206	Do.
Cameron mine powder No. 2-A, L. F.	do	do	233	10,950	3,338	Do.
Cameron mine powder No. 3-A	Class 4	do	296	10,930	3,333	Do.
Carbonite No. 1	do	do	259	10,950	3,338	E. I. du Pont de Nemours Powder Co., Wilmington, Del.
Carbonite No. 2	do	do	302	11,380	3,470	Do.
Carbonite No. 2-L. F.[2]	do	do	305	7,830	2,387	Do.
Carbonite No. 3	do	do	325	8,710	2,656	Do.
Carbonite No. 4	do	do	327	7,670	2,339	Do.
Carbonite No. 5	do	do	304	10,140	3,092	Do.
Carbonite No. 6	do	do	345	7,490	2,285	Do.
Coalite X	Class 1*a*	do	226	9,000	2,745	Atlas Powder Co., Wilmington, Del.
Coalite No. 1	Class 4	do	296	7,930	2,418	Do.
Coalite No. 2-D	do	do	310	8,430	2,571	Do.
Coalite No. 2-D. L	do	do	271	7,340	2,237	Do.
Coalite No. 2-M, L. F	do	do	301	9,220	2,811	Do.
Coalite No. 3-X	Class 1*a*	do	274	7,290	2,223	Do.
Coalite No. 3-XC	do	do	250	8,320	2,536	Do.
Coal special No. 1[3]	Class 4	do	288	11,800	3,598	Aetna Explosives Co. (Inc.), New York, N. Y.
Coal special No. 1-A[3]	do	do	276	9,370	2,857	Do.
Coal special No. 1-L. F.[2]	do	do	277	8,280	2,524	Do.
Coal special No. 2[5]	do	do	304	10,240	3,123	Do.
Coal special No. 2-W[3]	do	do	277	11,590	3,534	Do.
Coal special No. 3-C[3]	do	do	288	9,760	2,977	Do.
Collier powder B, N. F.[3]	Class 1*a*	do	224	10,950	3,338	Do.
Collier powder KN[3]	do	do	222	11,610	3,539	Do.
Collier powder No. X[3]	do	do	273	7,820	2,384	Do.
Collier powder X, L. F.[3]	do	do	252	9,990	3,047	Do.
Collier powder No. 2[3]	Class 4	do	300	8,870	2,704	Do.
Collier powder No. 5[3]	Class 1*a*	do	240	8,280	2,524	Do.
Collier powder No. 5-L. F.[3]	do	do	232	9,370	2,858	Do.
Collier powder No. 5 special[3]	do	do	236	8,330	2,541	Do.
Collier powder No. 6-L. F.[3]	Class 4	do	317	9,660	2,944	Do.
Collier No. 9[3]	Class 1*a*	do	283	6,690	2,040	Do.
Collier powder No. 11[3]	do	do	217	11,680	3,561	Do.
Collier powder No. 11-L. F.[3]	do	do	226	10,850	3,307	Do.
Cronite No. 1	do	do	233	10,490	3,198	G. R. McAbee Powder & Oil Co., Pittsburgh, Pa.
Cronite No. 5	do	No. 7	249	8,090	2,466	Do.
Detonite special	do	do	312	[4] 10,840	3,305	The King Powder Co., Cincinnati, Ohio.
Eureka No. 2	Class 2	No. 6	311	10,720	3,269	G. R. McAbee Powder & Oil Co., Pittsburgh, Pa.
Fort Pitt mine powder No. 1	Class 4	do	293	11,230	3,424	Fort Pitt Powder Co., Pittsburgh, Pa.
Fuel-ite No. 1	do	do	288	11,150	3,400	Burton Powder Co., Pittsburgh, Pa.
Fuel-ite No. 2	do	do	289	8,240	2,512	Do.
Fuel-ite No. 3	Class 1*a*	do	215	8,590	2,620	Do.
Giant coal-mine powder No. 5	Class 1*a*	No. 6	228	10,230	3,118	Giant Powder Co., Con., Giant, Cal
Giant coal-mine powder No. 6	Class 2	do	277	11,550	3,520	Do.
Giant coal-mine powder No. 7	do	do	245	10,830	3,301	Do.
Giant coal-mine powder No. 8	do	do	247	10,830	3,301	Do.
Guardian A[5]	Class 4	No. 7	296	10,130	3,089	Hercules Powder Co., Wilmington, Del.
Guardian No 2[5]	Class 1*a*	No. 6	245	8,980	2,738	Do.
Guardian No. 2-X[5]	do	do	245	7,990	2,437	Do.
Guardian No. 3[5]	do	do	272	7,660	2,336	Do.
Guardian No. 3-X[5]	do	do	252	8,470	2,582	Do.
Guardian coal powder B[5]	Class 4	No. 7	310	8,960	2,733	Do.
Hecla No. 2	Class 1*a*	do	253	13,990	4,264	E. I. du Pont de Nemours Powder Co., Wilmington, Del.
Hygrade coal powder No 2	Class 4	No. 6	329	8,450	2,576	Hygrade Powder Co., Philadelphia, Pa.
Kanite A	Class 1*b*	No. 8	255	[4] 10,730	3,270	W. H. Blumenstein Chemical Works, Pottsville, Pa.
Lomite No. 1	Class 2	No. 6	300	13,940	4,250	G. R. McAbee Powder & Oil Co., Pittsburgh, Pa.
Lowinite No. 2-B	Class 1*a*	do	258	9,740	2,971	Lowinite Explosives Manufacturing Co., Pittsburgh, Pa.
Meteor AXXO	Class 2	do	434	8,410	2,563	E. I. du Pont de Nemours Powder Co., Wilmington, Del.
Mine-ite A	Class 4	do	296	11,290	3,443	Burton Powder Co., Pittsburgh, Pa.
Mine-ite A-2	do	do	319	10,670	3,252	Do.
Mine-ite B	do	do	340	9,540	2,908	Do.
Mine-ite B-2	do	do	334	7,410	2,260	Do.
Mine-ite No. 5-D	Class 1*a*	do	241	8,720	2,658	Do.
Mine-ite No. 6-D	do	do	224	8,090	2,467	Do.

[1] 1¼-inch cartridges used.
[2] Replaced on the permissible list under date of Jan. 12, 1915.
[3] Manufacture by Aetna Explosives Co. (Inc.), authorized under date of Jan. 11, 1915.
[4] 1¼-inch cartridges used.
[5] Manufacture by Hercules Powder Co. authorized under date of June 12, 1914.

Permissible explosives tested prior to March 1, 1915—Continued.

Brand.	Class designation.	When used with detonators, preferably electric detonators, of not less efficiency than—	Unit deflective charge.	Rate of detonation in 1¼ by 8 inch cartridge.		Manufacturer.
			Grams.	*Feet per second.*	*Meters per second.*	
Miners Friend No. 1	do	do	233	11,580	3,529	Atlas Powder Co. Wilmington, Del.
Miners Friend No. 2	do	do	260	10,330	3,149	Do.
Miners Friend No. 3	do	do	252	8,030	2,449	Do.
Miners Friend No. 4	do	do	261	9,980	3,044	Do.
Miners Friend No. 5	do	do	250	8,570	2,614	Do.
Miners Friend No. 6	do	do	234	10,900	3,324	Do.
Monobel No. 1	do	do	216	11,700	3,568	E. I. du Pont de Nemours Powder Co., Wilmington, Del.
Monobel No. 2	do	do	239	9,870	3,009	Do.
Monobel No. 3	do	do	243	7,260	2,212	Do.
Monobel No. 4	do	do	248	8,980	2,738	Do.
Monobel No. 5	do	do	267	6,760	2,061	Do.
Monobel No. 6	do	do	218	10,380	3,165	Do.
Monobel No. 7	do	do	211	10,050	3,065	Do.
Nitro low-flame No. 1	Class 4	do	303	13,380	4,079	Nitro Powder Co., Kingston, N. Y.
Nitro low-flame No. 2	do	do	298	14,560	4,439	Do.
Red H No. 1	Class 1*a*	do	216	11,700	3,568	Hercules Powder Co., Wilmington, Del.
Red H No. 2	do	do	239	9,870	3,009	Do.
Red H No. 3	do	do	243	7,260	2,212	Do.
Red H No. 4	do	do	248	8,980	2,738	Do.
Red H No. 5	do	do	267	6,760	2,061	Do.
Red H No. 6	do	do	218	10,380	3,165	Do.
Red H No. 7	do	do	211	10,050	3,065	Do.
Trojan coal powder H	Class 3	do	394	9,420	2,872	Pennsylvania Trojan Powder Co., Allentown, Pa.
Trojan coal powder I	do	do	410	9,620	2,934	Do.
Trojan coal powder J	do	do	360	10,590	3,230	Do.
Tunnelite B	Class 1*a*	do	249	9,990	3,047	G. R. McAbee Powder & Oil Co., Pittsburgh, Pa.
Tunnelite C	do	do	255	10,060	3,068	Do.
Tunnelite No. 5	Class 4	do	328	8,400	2,562	Do.
Tunnelite No. 6	do	do	305	9,670	2,947	Do.
Tunnelite No. 6–L. F	do	do	301	9,620	2,933	Do.
Tunnelite No. 7	do	do	311	8,720	2,659	Do.
Tunnelite No. 8	do	do	324	8,020	2,446	Do.
Tunnelite No. 8–L. F	do	do	322	8,720	2,658	Do.
Vigorite No. 1	do	do	259	10,950	3,338	Atlas Powder Co., Wilmington, Del.
Vigorite No. 2	do	do	298	10,920	3,330	Do.
Vigorite No. 3	do	do	320	8,140	2,483	Do.
Vigorite No. 4	do	do	341	7,480	2,281	Do.
Vigorite No. 5	do	do	308	10,830	3,303	Do.
Vigorite No. 6	do	do	345	7,490	2,285	Do.
Xpdite No. 1	do	do	259	10,950	3,338	Hercules Powder Co., Wilmington, Del.
Xpdite No. 2	do	do	302	11,380	3,470	Do.
Xpdite No. 3	do	do	325	8,710	2,656	Do.
Xpdite No. 4	do	do	327	7,670	2,339	Do.
Xpdite No. 5	do	do	304	10,140	3,092	Do.
Xpdite No. 6	do	do	345	7,490	2,285	Do.

SUPPLEMENTARY LIST OF PERMISSIBLE EXPLOSIVES.

Brand.	Class designation.	When used with detonators, preferably electric detonators, of not less efficiency than—	Unit deflective charge.	Rate of detonation in 1¼ by 8 inch cartridge.		Manufacturer.
				Feet per second.	Meters per second.	
			Grams.			
Bituminite No. 8-L. F	Class 4.	No. 6.	303	9,300	2,834	Jefferson Powder Co., Birmingham, Ala
Cameron mine powder No. 5-A	do	do	299	8,900	2,712	Cameron Powder Manufacturing Co., Emporium, Pa.
Tunnelite AA	Class 1a.	do	253	7,690	2,346	G. R. McAbee Powder & Oil Co., Pittsburgh, Pa.
Tunnelite No. 3	Class 4.	do	291	10,110	3,083	Do.
Tunnelite No. 4	do	do	309	10,620	3,238	Do.

Definition of Permissible Explosives-----Cont.

Unit Deflective Charge as Determined by the Ballistic Pendulum.

The figures in the fourth column of the table show the weight in grams of the quantity of explosive that is required to swing the pendulum mortar the same distance as one-half pound (227 grams) of the standard 40 per cent "straight" nitroglycerin dynamite of the Pittsburgh Testing Station. Many observers have expressed the opinion that the "coal-getting" strength of permissible explosives is represented better by the results of this test than by the results of any other single test yet devised. The reader should note that the results do not take into consideration whether the coal when shot down is fine or coarse.

The Rate of Detonation.

The table shows, in feet per second and meters per second, the relative velocity of detonation of the explosives. The adaptability of a permissible explosive to a particular coal-mining condition depends greatly on its rate of detonation. For certain work in which a shattering effect is desired, as in driving through or "brushing" rock, or in producing coal for coke making, the explosive reaction should be rapid, and for such work permissible explosives having a high rate of detonation should be selected. Similarly, for shooting down a soft friable coal to produce lump or steam coal, a permissible explosive should be selected that detonates slowly and hence gives a more prolonged pressure. In medium hard coal an explosive having an intermediate rate of detonation may be expected to be most suitable.

Although these relations usually hold, they do not always, because coals differ in hardness and coal beds differ in the number and position of the joints, partings, and shale bands. Such facts have to be considered in selecting an explosive for mining coal.

An explosive having a very low rate of detonation is not always the best for mining a soft friable coal, because some of its energy may be lost by its gases escaping through cracks and fractures in the bed. Under such conditions an explosive having an intermediate rate produces the most economical results.

Classes of Permissible Explosives.

In order that the user of explosives may know the nature and characteristic component of each of the permissible explosives, and that he may be able to select an explosive to meet a specific requirement, the designation and characteristics of each class are given below:

Class 1, ammonium-nitrate explosives.—To class 1 belong all the explosives in which the characteristic material is ammonium nitrate. The class is divided into two subclasses. Subclass (a) includes every ammonium-nitrate explosive that contains a sensitizer that is itself an explosive. Subclass (b) includes every ammonium-nitrate explosive that contains a sensitizer that is not in itself an explosive. The ammonium-nitrate explosives of subclass (a) consist principally of ammonium nitrate with small percentages of nitroglycerin, nitrocellulose, nitrosubstitution compounds which are used as sensitizers. The ammonium-nitrate explosives of subclass (b) consist principally of ammonium nitrate with small percentages of resinous matter or other nonexplosive substances used as sensitizers.

All of the ammonium-nitrate explosives readily absorb moisture from the atmosphere, and great care should be taken in storing them or in using them in damp places. They are not suitable for use in wet mines. If in such mines a cartridge of an ammonium-nitrate explosive is opened and its contents exposed for only a few hours to the damp atmosphere, the explosive may deteriorate and later fail to detonate completely. The ammonium-nitrate explosives when stored in well-ventilated magaznies for only a few months have shown signs or deterioration. For this reason the ammonium-nitrate explosives should be obtained in a fresh condition and should be used as soon as possible after their receipt. When fresh, these explosives, if properly detonated, have the advantage of producing only small quantities of poisonous and inflammable gases, and are adapted for mines that are not unusually wet, and also for mines and working places that are not well ventilated.

Class 2, hydrated explosives.—To class (2) belong all explosives in which salts containing water of crystallization are the characteristic materials. The explosives of this class are somewhat similar in composition to the ordinary low-grade dynamites, except that one or more salts containing water of crystallization are added to reduce the flame temperature. They are easily detonated, produce only small quantities of poisonous gases, and most of them can be used successfully in damp working places.

Class 3, organic nitrate explosives.—To class (3) belong all the explosives in which the characteristic material is an organic nitrate other than nitroglycerin. The permissible explosives listed under class (3) are nitrostarch explosives. They produce small quantities of poisonous gases on detonation.

Class 4, nitroglycerin explosives.—To class (4) belong all the explosives in which the characteristic material is nitroglycerin. These explosives contain free water or an excess of carbon, which is added to reduce the flame temperature. A few explosives of this class contain salts that reduce the strength and shattering effect of the explosives on detonation. The nitroglycerin explosives have the advantages of detonating easily and of not being readily affected by moisture. On detonation some of them produce poisonous and inflammable gases equal in quantity to those produced by black blasting powder, and for this reason they should not be used in mines or working places that are not well ventilated.

Courtesy Department of the Interior Bureau of Mines.
MINING CATALOGUES

ATLAS POWDER CO.

WILMINGTON, DEL.

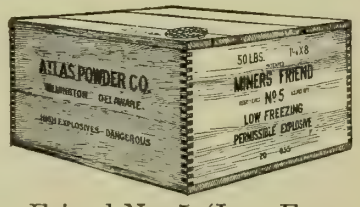
Blasting Explosives

Atlas Permissible Explosives for Gassy and Dusty Coal Mines

Damp proof—Not water proof. No harmful smoke or fumes. Sensitive to No. 6 Detonator.

Miners Friend—6 Grades.

Miners Friend No. 1 (High Freezing); Miners Friend No. 6 (Low Freezing); Very Strong and Medium Slow.



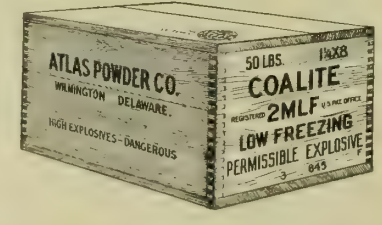
Miners Friend No. 2 (High Freezing); Miners Friend No. 4 (Low Freezing); Very Strong and Slow.

Miners Friend No. 3 (High Freezing); Miners Friend No. 5 (Low Freezing); Very Strong and Very Slow.

Coalite—6 Grades.

Coalite No. 1 (High Freezing) Strong and Slow.

Coalite 2D (High Freezing); Coalite 2 MLF (Low Freezing); Coalite 3XC (High Freezing); Medium Strong and Slow.



Coalite 2DL (High Freezing) Medium Strong and Very Slow.

Coalite X (High Freezing) Very Strong and Slow.

Vigorite—6 Grades.

Vigorite No. 1 (High Freezing.

Vigorite No. 2 (High Freezing); Vigorite No. 5 (Low Freezing); Strong and Medium Slow.



Vigorite No. 3 (High Freezing); Vigorite No. 6 (Low Freezing); Medium Strong and Medium Slow.

Vigorite No. 4 (High Freezing) Medium Strong and Very Slow.

Put up in cartridges 7/8 in. x 8 in. to 1¾ in. x 8 in. and packed in 25 lb. and 50 lb. cases.

Blasting Supplies

Dynamite

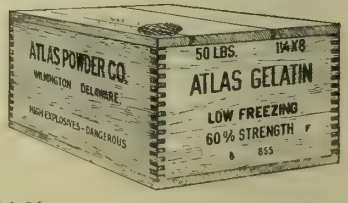
Each strength and kind made either high or low freezing. Sensitive to No. 6 Detonator.

Atlas Extra—20% to 60%.



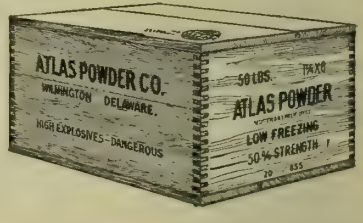
Spreads and heaves when exploded. Fumes not objectionable. Not waterproof. For headings, strippings, cuts and other rock or coal blasting that is not wet or gassy.

Atlas Gelatin—35% to 100%.



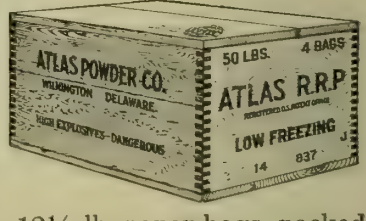
Almost non-freezing. Practically fumeless. Waterproof. For tunnel driving and rock blasting of all kinds in mines or under water.

Atlas Powder—20% to 60%.



Very quick and shattering. Fumes objectionable under ground. Partly waterproof. For outside work in hard rock that must be broken small.

Low Powder
Atlas Low Freezing R. R. P.



A granuler, low grade explosive invaluable in cuts, strippings or other open excavating that is not wet. Twice as strong as blasting powder. Exploded with a dynamite primer. Put up in 12½ lb. paper bags, packed in 50 lb. cases.

Atlas Blasting Powder



All Standard granulations from FFFF to CCC. The smaller the grain the quicker and more shattering the powder.

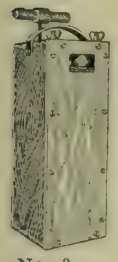
Hard pressed, dense, regular, moisture-resisting grains. Little smoke. Glazed or unglazed. Packed in 25 lb. kegs and 5 lb. cans.

U. S. Standard Blasting Machines

This is a light weight blasting machine, especially made for work where it is not necessary to fire more than five charges at a time. It has a capacity of 5 copper wire electric fuzes. It weighs 6 pounds. When desired, is furnished with a lock, which prevents its being operated by any other person than the blaster. It is equipped with two posts only.



No. 1.



No. 3.

Standard size for quarry and mine. Capacity 30 copper wire electric fuzes. Weight 25 pounds. Regularly equipped with two posts. If desired, will furnish with three posts, increasing capacity 50 per cent without extra charge.

When equipped with three posts may use with two leading wires, connecting one wire to middle post and other wire to either outside post.

To use three posts connect leading wire from two outside posts to first and last electric fuzes in circuit. Connect wire from middle post to middle of circuit.

This blasting machine, while operated like the others, is of a different type, embodying many refinements of design, giving a machine of great power and light weight. It has a capacity of 150 copper wire electric fuzes, and is, by far, the most powerful blasting machine made. It has two posts and weighs only 37 pounds.



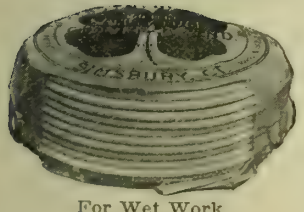
No. 6.

Fuse

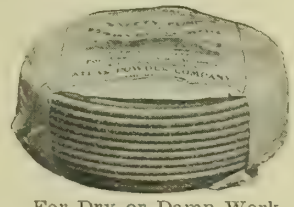
Wrapped in rolls of 100 feet. Ten to sixty rolls to the case.



For Wet Work
"CHARTER OAK"



For Wet Work
"CLOVER"



For Dry or Damp Work
"Beaver"

Galvanometers and Rheostats



Atlas Galvanometer for Testing Blasting Circuits.



Atlas Rheostat for Testing Blasting Machines.

Insulated Copper Leading Wire and Connecting Wire



Coil of Leading Wire.



Spool of Connecting Wire.

Leading Wire—250 ft. and 500 ft. Coils. Weighs about 9½ lbs. per M ft.

Connecting Wire—1 lb. and 2 lb. Spools. About 210 ft. to the pound.

Leading and connecting wire are sold by the pound.

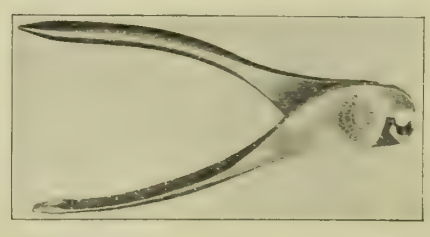
Victor Electric Fuzes—No. 6, No. 7, No. 8. Copper or Iron Wires.

Blasting Caps—No. 6, No. 7, No. 8.

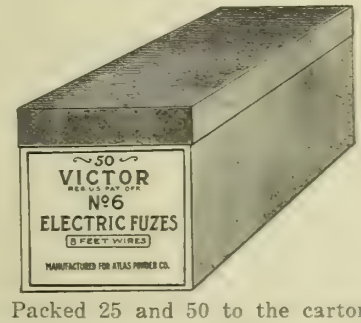


Packed 25 or 100 to the tin box—500 to 5,000 to the case.

Atlas Cap Crimpers



The only safe, secure and reliable way to attach a blasting cap to fuse is with a cap crimper.



Packed 25 and 50 to the carton—ten cartons to the case. Wires 4 ft. to 30 ft. long.

BRANCH OFFICES:

BOSTON, MASS.
NEW YORK, N. Y.
PHILADELPHIA, PA.
ALLENTOWN, PA.
POTTSVILLE, PA.
WILKES-BARRE, PA.
PITTSBURGH, PA.
KNOXVILLE, TENN.
MCALLISTER, OKLA.
NASHVILLE, TENN.
MEMPHIS, TENN.
BIRMINGHAM, ALA.
NEW ORLEANS, LA.
JOPLIN, MO.
ST. LOUIS, MO.
KANSAS CITY, MO.
PITTSBURG, KAN.
HOUGHTON, MICH.

AUSTIN POWDER COMPANY

CLEVELAND, OHIO

1229 Rockefeller Building

Established in 1833.

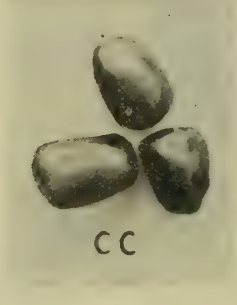


Factory at
FALLS JUNCTION, O.

Branch Offices at
DETROIT,
ST. LOUIS,
CHICAGO.

Blasting Powder, Dynamite, Blasting Supplies















Austin Blasting Powder is manufactured of the best materials obtainable, and is of uniform quality and size. It is the standard powder for coal mining, and has been for many years. For other kinds of blasting it has no equal. It is made in seven sizes, and is calculated to meet every need in the blasting line, where Black Powder can be used at all.

Where High Explosives are required, we recommend "GOLD MEDAL" Dynamite, which is all that its name implies, and is manufactured in many different strengths, both in Nitro Glycerine and Ammonia grades. You are bound to get results by using "GOLD MEDAL."

A complete stock of "Gold Medal" Dynamite and Blasting Supplies is carried at Cleveland, and at our branch offices.

Our shipping facilities are unequaled, ensuring our customers prompt service at all times. Write for prices.

Gold Medal Dynamite

AETNA EXPLOSIVES COMPANY, Inc.

Two Rector Street
NEW YORK CITY

Branch Offices in all Mining Centers

Manufacturers of

Dynamite, Permissible Powders, Black Powder and Blasting Supplies for every purpose.

Products

Permissible Explosives

Aetna coal powder A
Aetna coal powder AA
Aetna coal powder B
Aetna coal powder C
Aetna Coal powder No.2
Bituminite No. 1
Bituminite No. 3
Bituminite No. 4
Bituminite No. 5
Bituminite No. 8-L.F
Coal special No. 1
Coal special No. 1-A
Coal special No. 1-L.F
Coal specal No. 2
Coal special No. 2-W
Coal special No. 3-C
Collier powder B. N. F.
Collier powder KN
Collier powder No. X
Collier powder X, L.F.
Collier powder No. 2
Collier powder No. 5
Collier powder No. 5 special
Collier powder 5-L.F.
Collier powder No. 6-L.F.
Collier powder No. 6-L.F.
Collier No. 9
Collier powder No. 11
Collier powder No. 11-L.F.

Dynamite

Nitroglycerine and Low Freezing Nitroglycerine.
Ammonia and Low Freezing Ammonia.
Gelatine, Low Freezing and Non-Freezing.
Miami Black Powder.
CCC CC C F FF FFF FFFF

Blasting Supplies

Lion Exploders.
Caps.
Batteries.

Organization

The Aetna Explosives Co., Inc., are the most prominent independent explosive producers in the world, and are capable of supplying the largest consumers satisfactorily in every respect.

We have manufacturing plants located in all sections of the United States within easy access of every coal producing center. Therefore, an adequate output can be assured to meet every demand.

Manufacture

The manufacture of all of our explosives comes directly under the supervision of men of great competence who have made the explosive industry a life study. We employ the services of the most learned chemists who are working constantly to improve the methods of manufacture and the composition of the explosives.

The materials entering into the manufacture of our explosives are carefully tested and great care is used in the preparation and mixture of all ingredients.

Facilities for Handling

In order that prompt deliveries can be made, we have a number of magazines located throughout coal mining fields, where we haul the explosives by wagon direct to your mines. Therefore, in buying your explosives from this company, extreme care is always taken that your supply does not become exhausted.

THE BURTON POWDER COMPANY

Manufacturers of

Black Blasting Powder, Permissible Explosives Dynamite and Blasting Supplies

General Distributing Points

Pittsburgh, Pa.	Columbus, Ohio.
Leckrone, Pa.	Fostoria, Ohio.
New Castle, Pa.	Chicago, Ill.
Cumberland, Md.	Joliet, Ill.
Lowellville, Ohio.	Winona, Minn.

General Office
PITTSBURGH PENN'A

Western Sales Office
CHICAGO, ILL.

Black Blasting Powder

Burton Blasting Powder is made in several standard granulations. It is recommended for use in mines that are not gaseous or dusty. The grains are thoroughly glazed and are free running and in this way are protected from the moisture of the air.

Great care is exercised in separating the grains into the different sizes. Each granulation is uniform and the best raw materials are used. A miner will always obtain uniform results with his different shots if he uses Burton Blasting Powder.

Permissible Explosives

All of Burton's Permissible Explosives have passed United States Government Tests and are recommended for use in gaseous or dusty coal mines. They are manufactured so as to have different rates of detonation to meet the varying conditions of coal mining.

The following Permissible Explosives Manufactured by the Burton Powder Company are classified by the Bureau of Mines as explosives of class 1-A.
Fuel-ite No. 3. Mine-ite No. 5 D. Mine-ite No. 6 D.

They are especially recommended for mining lump coal. They are practically fumeless and produce small quantities of smoke on detonation.

The following permissible explosives are classified by the Bureau of Mines as explosives of Class 4. They are not affected by moisture and have the advantage of detonating easily:

Fuel-ite No. 1, Mine-ite A, Mine-ite A-2, Mine-ite B, Fuel-ite No. 2.

The permissible explosives Fuel-ite No. 1, Mine-ite A and Mine-ite A-2 have relatively high rates of detonation and are recommended for use in hard shooting Coal.

Mine-ite B and Fuel-ite No. 2 are permissible explosives which develop their gases at a slow rate and are specially adapted for use in soft friable coals or whenever lump or steam coal is desired.

Burton's representatives are mining experts. They have worked in the mine, and in addition to this they have made a close study of explosives, combined their knowledge of each and now are in a position to study mining questions from not only the viewpoint of the miner, but from the viewpoint of the manufacturer of explosives as well.

The services of these experts are at the command of our customers. When you are in doubt, communicate at once with our nearest office and it will take only a short time to settle any question which may bother you. If you have never used Permissible Explosives, investigate them thoroughly and see whether they will aid you. If you have used other permissibles than Burton's it will pay you to try Burton's Mine-ite or Fuel-ite. We have experts from the man who purchases the raw material to the man who sells it to you and if you give our representative a chance, he may be able to show you where you can increase the returns you are getting from permissibles.

Dynamite

Burton's GOOD LUCK DYNAMITE has been on the market for ten years, during which time it has established a wide reputation for uniformity and reliability. Millions of pounds are used annually. No more conclusive evidence of its superior quality could be given than the fact that the United States Government is one of its constant purchasers.

An entire department is devoted to its study. Naturally, we have found that results differ with the varying degrees of strength and speed. We have also found that different operations demand vastly different kinds of dynamite. Extensive experimental work has shown us the qualities which give best results in each of the different operations. The outcome has been a line of grades which perfectly meet each set of requirements.

When you use Burton GOOD LUCK DYNAMITE you get the benefit of all these years of experiment and study. Burton dynamite is the very tip-top of quality, but don't forget that it is not all a matter of quality. It is also a question of getting the right strength and speed for the work you want it to do.

GOOD LUCK DYNAMITE gives you just what you need in each case. The Horse Shoe Trade Mark and the Percentage of Strength are stamped upon every box and every cartridge. Insist on getting it, and accept no substitute. Then you will know you are *right*.

Blasting Supplies

Fuse, Blasting Caps, Blasting Machines, Electric Fuses, Wire, Thawing Kettles, Cap Crimpers, Augers; Galvanometers, Rheostats.

E. I. du Pont de Nemours Powder Company

MANUFACTURERS OF

Permissible Explosives, Blasting Powder and Blasting Supplies

EXPLOSIVES FOR ALL PURPOSES

General Offices:—WILMINGTON, DEL.

Works:—

Branch Offices:—
BIRMINGHAM, ALA.
CHICAGO, ILL.
DENVER, COLO.
DULUTH, MINN.
HUNTINGTON, W. VA.
MEXICO CITY, MEXICO.
NEW YORK, N. Y.
BUFFALO, N. Y.
PITTSBURGH, PA.
SAN FRANCISCO, CAL.
SEATTLE, WASH.
PORTLAND, OREGON.
SPOKANE, WASH.
ST. LOUIS, MO.
SCRANTON, PA.

Blasting Powder.
AUGUSTA, COLO.
MONTCHANIN, DEL.
BIRMINGHAM, ALA.
FAIRCHANCE, PA.
MOOAR, IOWA.
NEMOURS, W. VA.
WAYNE, N. J.
WILPEN, MINN.
STORRS JCT., PA.
JERMYN, PA.
MOOSIC, PA.
LAUREL RUN, PA.
GRACEDALE, PA.
WAPWALLOPEN, PA.
DU PONT, WASH.

Permissibles.
ASHBURN, MO.
DU PONT, WASH.
EMPORIUM, PA.
LOUVIERS, COLO.
GIBBSTOWN, N. J.

Blasting Supplies.
POMPTON LAKES, N. J.

Products

For Coal Mine Use: Monobel and Carbonite Permissible Explosives, Du Pont Blasting Powder and Blasting Supplies.

Quality and Service

The Du Pont Company has been making explosives since 1802, 113 years. It has but one standard of quality for its products,—the highest.

Extensive experimental and testing laboratories are maintained to keep Du Pont products apace with the most modern explosive requirements.

The number and location of its works and its extensive system of storage magazines assure prompt delivery.

Monobel Permissible Explosives.
(Passed U. S. Govt. tests.)

For use in gaseous and dusty coal mines that are not very wet. They are practically fumeless when



properly detonated. (Require a Du Pont No. 6 blasting cap or electric blasting cap.) Give off very little smoke and fumes.

Monobel No. 4 (low-freezing). For blasting hard coal this grade is much better than blasting powder or dynamite, because it makes no injurious smoke or



fumes, and because, after a little practice, a miner can mine the coal cheaper. It is a little slower in its action than Monobel No. 6. Monobel No. 4 will rarely freeze even in the coldest weather. Requires no thawing.

Monobel No. 5 (low-freezing). Especially adapted to mining lump coal. It is just as strong as Monobel No. 4 but is so much slower acting that miners who have learned how to use it can mine the softest coal without breaking or shattering it any more, and at no greater expense than if blasting powder is used. Monobel No. 5 rarely freezes no matter how cold the weather. Requires no thawing.

Monobel No. 6 (low-freezing). Intended particularly for hard coal, hard-shooting soft coal, soft coal which is to be coked, and blasting top and bottom

rock. It is a little quicker than Monobel No. 4. Requires no thawing.

Monobel Nos. 1, 2 and 3 are the same as Monobel Nos. 6, 4 and 5 respectively, except that they (Nos. 1, 2, 3) are not low-freezing. Monobel Nos. 1 and 2 require no thawing but Monobel No. 3, if frozen, must be thawed before being used.



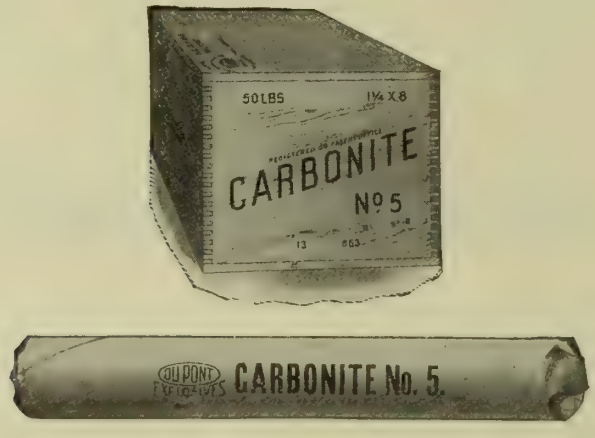
Du Pont Testing Gallery for Permissible Explosives at Gibbstown, N. J.

This is the only testing gallery in the United States for testing Permissible Explosives, maintained on a scale equal to that of the United States Government testing gallery at Pittsburgh.

Carbonite Permissible Explosives

(Passed U. S. Govt. Tests.)

For very wet work in gaseous and dusty coal mines. Unless the work is exceptionally wet there is no disadvantage in slitting the Carbonite cartridge if the shot is fired immediately. Gives off a little more smoke and fumes than Monobel but much less than blasting powder or dynamite.



Carbonite No. 1 is quick acting, for use in anthracite coal and bituminous coal which it is desired to shatter for coking purposes. It gives the most shattering effect of all the Carbonite grades. Freezes between 45° and 50° F. When frozen, must be thawed before using.

Carbonite No. 4 is about 20% slower in velocity of detonation than Carbonite No. 3. Its shattering effect is the least of any of the Carbonites. It is slightly denser than Carbonite No. 3 but not quite so dense as Carbonite No. 1. In water resisting properties, strength and fumes, it is equal to Carbonite No. 3. Freezes between 45° and 50° F. When frozen must be thawed before using.

Carbonite No. 5 (low-freezing). Its shattering effect is less than Carbonite No. 1. Will often not require thawing even if subjected to temperatures considerably below 35° F.

Carbonite No. 6 (low-freezing). This grade is quite slow in action. Should be used in all softer and more friable bituminous coal where lump coal is desired. Its shattering effect is less than either Carbonite No. 1 or Carbonite No. 5. Will often not require thawing even if submitted to temperatures considerably below 35° F.

Carbonites Nos. 2 and 3 are the same as Carbonites Nos. 5 and 6 respectively except that they (Nos. 2 and 3) are not low-freezing. Carbonites Nos. 2 and 3 freeze between 45° and 50° F.

When frozen all Carbonites must be thawed before using.

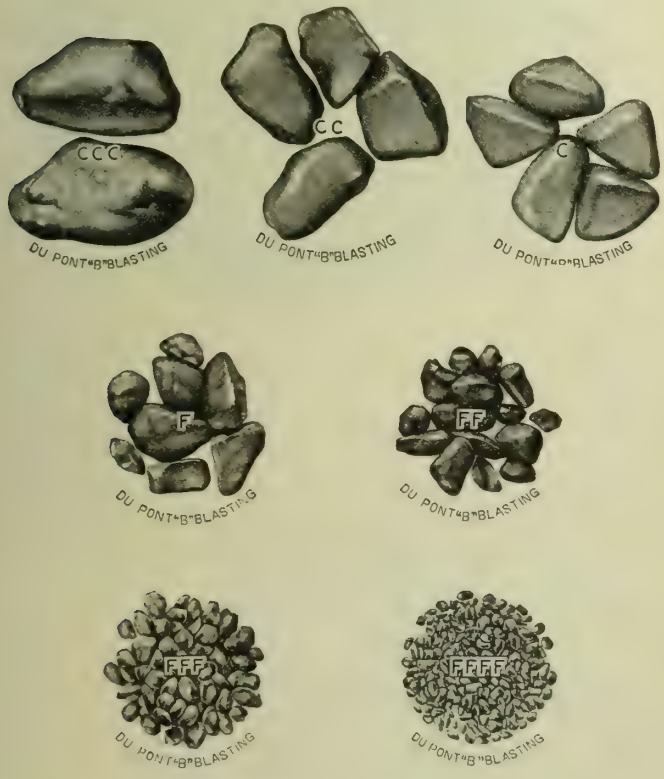
Du Pont Blasting Powder

Where mine gas and coal dust are not present in dangerous quantities, the most economical and satisfactory explosive for use in coal mines is B Blasting powder.



Blasting powder is made in but one strength, its adaptability to different kinds of work being controlled by regulating its quickness of action. This is accomplished by producing it in grains of different sizes. The finer granulations are much quicker and have a greater breaking and shattering effect than the coarser ones, which latter have more of a tendency to lift and heave the coal out in large lumps.

Du Pont B Blasting powder is made in seven standard granulations ranging from CCC (coarse) to FFFF (fine). This range of grain sizes insures the coal miner surely finding a size granulation that will just suit his particular work. The greatest care is exercised to insure only the purest and best of raw materials entering into the manufacture of Du Pont Blasting Powder. Our men are the most skilled and experienced powder-makers in the world. Our mechanical equipment is the most modern, insuring perfect incorporation of materials. A system of rigid inspection during the whole course of manufacture, and of the finished product, makes certain that the user of Du Pont Blasting Powder will receive an explosive as perfect as human skill and intelligence can make.



Du Pont Blasting Supplies

Too much stress can hardly be laid on the importance of using reliable blasting supplies. The best supplies cost but a trifle in comparison with the value of the explosives with which they are used. Poor supplies frequently result in waste of the explosive and loss of life through partial or complete failure to detonate.

We know that the blasting supplies we manufacture and sell are absolutely reliable. Use them and they will bring out the best of which your explosives are capable; if you use Du Pont Blasting Supplies with Du Pont Explosives you have the ideal combination for maximum efficiency, low cost and general all-round satisfaction.

Electric Blasting Caps

Delay Electric Blasting Caps

Delay Electric Igniters

Connecting Wire

Leading Wire

Blasting Machines

Galvanometers (for testing blasting circuits)

Rheostats (for testing blasting machines)

Leading Wire Reels

Electric Squibs

Blasting Caps

Fuse

Cap Crimpers

Thawing Kettles

Tamping Bags

Blasting Mats

Special Literature

One or all of the following booklets will be freely sent on request to anyone interested in the use of explosives: "Permissible Explosives", "Blasting Powder" and "Blasting Supplies." In addition to the data about our own products, these books contain much general information of great value to technical and practical men who have occasion to use or buy explosives and supplies.

THE FORT PITT POWDER COMPANY

General Office, Kittanning, Pa.

Manufacturers of

Powder, Dynamite and Blasting Caps

Sales Offices:
Pittsburgh, Pa., Philipsburg, Pa., Chicago, Ill.

Works:
Scottdale, Pa., Fort Pitt, Pa.

Products

We manufacture Black Powder for all purposes, Blasting Caps, Permissible Powder and Dynamite.

Fort Pitt Mining Powder

is a high grade powder made from materials of the highest quality under the most improved methods



of manufacture, is hard pressed, highly glazed, manufactured in all the standard sized grains from C C C to F F F F, also special sized grains when necessary. Fort Pitt Powder is a lump coal producer but can be regulated to any degree of action to satisfy the miners.

Fort Pitt Blasting Caps

are manufactured in all sizes or grades suitable to properly detonate any brand or grade of Dynamite or Permissible Powder on the market. We use but



one explosive composition. Fulminate of Mercury compound has been proven superior to any other explosive being used in the manufacture of Blasting Caps and Fort Pitt Blasting Caps are made from Fulminate of Mercury.

Fort Pitt Mine Powder No. 1

is a Permissible Powder for use in gaseous or dusty coal mines and is a lump coal producer.

Fort Pitt Dynamite

Both Nitro Glycerin and Ammonia grades, in all strengths.

Prices quoted on application.

HERCULES POWDER CO.

Manufacturer of

High Explosives, Blasting and Sporting Powders.

Subsidiary, Hercules Powder Sales Co., Memphis, Tenn.

WORKS

Black Powder.
Ferndale ..... Pa.
Youngstown ... Ohio.
Columbus ..... Kans.
Pleasant Prairie, Wis.
Santa Cruz ..... Cal.

Branch Offices.
Hazleton .. Pa.
Pittsburgh .. Pa.
Chicago, .. Ill.
St. Louis,.. Mo.



General Offices
Wilmington, Delaware.

Dynamite.
Kenvil ..... N. J.
Joplin ..... Mo.
Hercules ..... Cal.

Black Powder.
Schaghticoke.. N. Y.

Branch Offices.
Joplin ..... Mo.
Pittsburg ..... Kans.
Salt Lake City, Utah.
San Francisco ... Cal.

Products:—

Permissible Powders:—Red. H, Xpdite and Guardian. Nitro Glycerin Dynamite, Ammonia Dynamite, Gelatin Dynamite, Blasting Gelatin, "E. L. F." (Extra Low Freezing) Dynamite, "B" Blasting Powder, "A" Blasting Powder, Hercules R. R. P., Blasting Supplies, Sporting Powders.

Hercules Permissible Explosives:—

The Hercules Powder Company manufactures three series of Permissible Explosives for use in gaseous and dusty coal mines, which have passed the rigid tests of the Government Testing Station at Pittsburgh, Pa.

Red H No. 1.	Guardian 2.	Xpdite No. 1.
Red H No. 2.	Guardian 2 X	Xpdite No. 2.
Red H No. 3.	Guardian 3.	Xpdite No. 3.
Red H No. 4.	Guardian 3 X	Xpdite No. 4.
Red H No. 5.		Xpdite No. 5.
Red H No. 6.		Xpdite No. 6.

RED H.—The Red H. Explosives are the product of a careful study of the requirements of an explosive for use in gaseous and dusty coal mines. Red H. is practically fumeless and with the exception of No. 3 requires no thawing. No. 1 is the quickest and has the greatest smashing effect. It can be used as Nos. 2, 4 and 6 are used, for shooting in hard anthracite or bituminous coal for coking purposes. Nos. 3 and 5 have a slow rate of detonation and, in coal produced, resemble a very good grade of blasting powder.



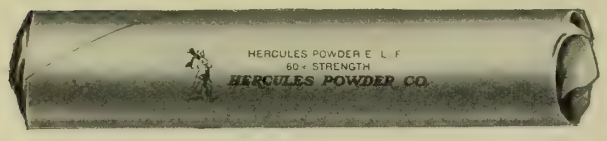
XPDITE.—For wet coal mining where permissibles are required, the Epdite explosives will give the most satisfactory results. Where a quick-smashing shot is necessary, use Xpdite No. 1. No. 2 has a slower rate of detonation than No. 1. No. 3 is a trifle slower than No. 2 and No. 4 is the slowest. Nos. 5 and 6 are made on a low freezing formula, but in every other way correspond to Nos. 2 and 3 respectively.





GUARDIAN.—Very often heavy Rock work is encountered in confined places where the use of a permissible explosive is necessary. The quick-smashing action of Guardian No. 2 makes the removal of hard rock easy. Guardian No. 2X is manufactured on the E. L. F. formulae and does not freeze until water freezes. Guardian No. 3 is slower in detonation than No. 2. It is used in gaseous mines and tunnels where a slow permissible of extra strength is desired. Guardian No. 3X is manufactured on the E.L.F formulae and, in strength and slowness of detonation, it corresponds to Guardian No. 3, except that it can be used in low temperatures but not when cold enough to freeze water.

Hercules Nitro Glycerin Dynamite,—has a strong, quick-smashing action that makes it a good explosive to use in tight work and where finely broken material is desired. It has fairly



good water-resisting qualities, but on account of its objectionable fumes should not be used for underground work except where ventilation is of the best. It is manufactured on both the regular and the extra low freezing formulae.



Hercules Extra (Ammonia) Dynamite,—Hercules Extra Dynamite is superior to nitro glycerin dynamite for underground work because its fumes are less objectionable and because it cannot be ignited by the side spit from cheap, defective of injured fuse. It has more of a heaving and shattering effect, but in the higher grades will give goo results in all but the very tightest work.

Hercules E. L. F., (Extra Low Freezing) Dynamite.—The Hercules E. L. F. explosives are similar in properties and action to other brands of nitro glycerin and extra dynamites except that they do not freeze and become insensitive until after water freezes. Hercules E. L. F. Nitro Glycerin Dynamite should be used in all open work that is not very wet and where the material is hard. In underground work that is comparatively dry, Hercules E. L. F. Extra Dynamite will give the best results.



Hercules Gelatin Dynamite,—For hard material and very wet work Hercules Gelatin Dynamite should be used. It is free from objectionable fumes and can be used safely in underground work. It also is manufactured on the E. L. F. formulae.



Hercules Blasting Gelatin,—is the strongest and quickest explosive in existence. It is absolutely waterproof and free from objectionable fumes. It can be used to good advantage in underground work by placing a few cartridges beneath charges of Hercules Gelatin in the bottom of holes that are difficult to blast.

Hercules "B" Blasting Powder,—The Hercules Powder Company manufactures a high grade of "B" Blasting Powder for use in non-gaseous coal mines, coal strippings, quarries and construction work. It is manufactured in all sizes of grains, glazed and unglazed, from FFFF to CCC, (running from fine to coarse.) Glazed powder is recommended in preference to unglazed as it absorbs less moisture, is easier to load, more compact and exerts a stronger explosive force.



Hercules Blasting Supplies,—include blasting machines, electric blasting caps, squibs, caps, fuse, leading and connecting wire, magazines; in fact everything used with explosives.



Hercules Service.—With a line of plants stretching from the Atlantic to the Pacific and a large system of magazine distributing points, all conveniently located, the Hercules Powder Company is able to take care of its customers' needs promptly and efficiently. All the ingredients which go into the manufacture of our products are carefully selected and are the best obtainable. In charge of our plants are men whose knowledge and experience in the manufacture of explosives is a guarantee that these ingredients are combined with the highest possible degree of skill and care. However, Hercules Service does not stop with the prompt delivery of high grade explosives. Our technical representatives are at the service of our customers either to advise as to the best explosives for any particular work or to assist in getting the maximum efficiency from Hercules Explosives that are in use. We are not satisfied simply to sell the best dynamite, blasting powder and blasting supplies, but when a customer wishes it we are glad to show how they can be used most economically. Those who buy Hercules products have an efficient corps of Explosives Engineers at their disposal.

It will cost you nothing to investigate Hercules Explosives and Hercules Service. It may be the means of effecting a substantial saving for you by increasing the amount of work you get out of your explosives. Will you not communicate with our nearest branch office so that our representative may call and tell you more about Hercules?

THE KING POWDER COMPANY

CINCINNATI, OHIO
First National Bank Building

Works, King's Mills, Ohio
Middletown Junction, Ohio

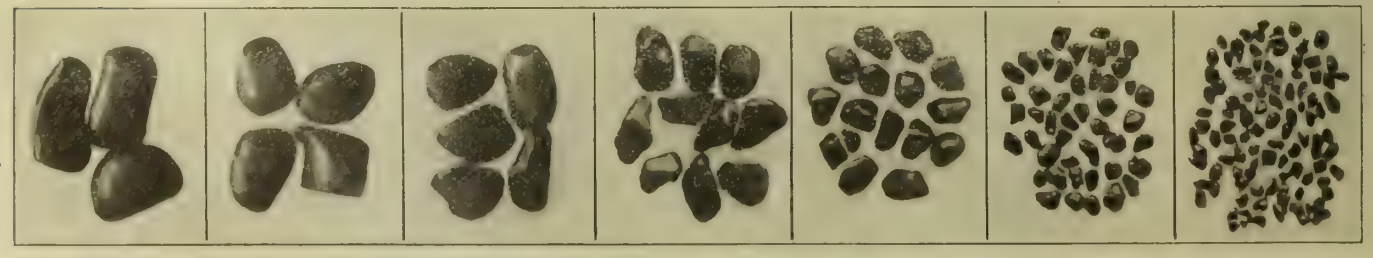
King Blasting, Rex Dynamite, Blasting Supplies

Mr. Superintendent, here are the **results** YOU want.



This shot is one of a series of photographs showing a well known mine. SEE THOSE LUMPS!!

The POWDER that GAVE THESE RESULTS



King Blasting is made in 7 standard granulations of best grades of materials, thoroughly incorporated, hard pressed, uniform granulation, high glaze, a superior article for use in non-gaseous mines. Write us for suggestions, we will be glad to give you the services of our experts.

Rex Dynamite and a full line of Blasting Supplies. "Quality and Service"—our motto.

BALL GRAIN EXPLOSIVES CO.

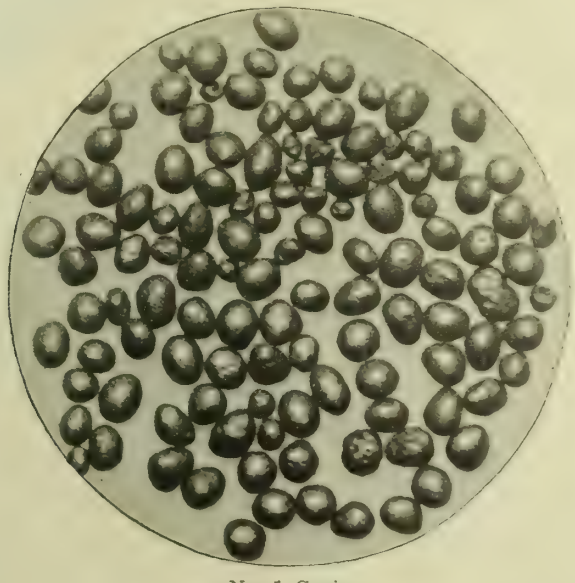
WILMINGTON, DELAWARE

Black Blasting Powder





No. 2 Grain.



No. 1 Grain.

Ball Grain Powder is a twentieth century product. The grains themselves are manufactured by machinery which forms each one separately.

In the manufacture of smokeless powder, whose superiority all sportsmen well know, the grains themselves are manufactured and, in the case of military rifle powders, each grain in a mathematical figure whose size and shape are pre-determined.

Ball Grain Powder is the result of the application of these modern principles to Black Blasting Powder.



No. 0 Grain.

It goes without saying that the powder is free running, because the grains roll.

It it not the purpose of this notice to cry up the merits of the Ball Grain Powder, nor to make comparisons unfavorable to our competitors, but we will ask any fair-minded man if the application of modern and up-to-date methods would be likely to produce an inferior product.

We would prefer in all cases, that our customers make for themselves a thorough test of the powder, and we will be glad to give such information as will be of service to them in the use of our product.

MINERS' SUPPLY CO.

SQUIBS

St. Clair, - Pa.

The Daddow & Beadle Patent Safety Squibs

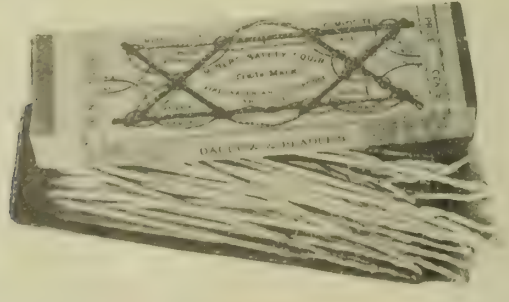
for exploding black powder were originated and perfected by S. H. Daddow and Jesse Beadle. We have manufactured them for forty years, and they are established wherever mining is done as the safest, cheapest and most reliable means for exploding blasts in mines and quarries.

These squibs are packed in neat strong wooden cases, weighing about thirty pounds, easily stored and handled. They may be kept for years in a dry place without damage. A case holds 100 boxes, each containing 100 squibs—10,000 squibs to a case.



We call attention to this especially because since we originated and established this business other squibs have been offered on the market which in many cases are short count, varying from 100 to 80, or even less, to a box. Among these short-count squibs there are usually some that are unusable, without powder or with defective matches.

The D. & B. Squibs are honestly counted and rigidly inspected. Every squib we send out is reliable and effective, so far as care and attention can make it so.



No. 1 Squib

is for general use in mines where there is no dangerous quantity of inflammable gas. The match burns with a flame. These squibs are packed in boxes with yellow labels, and are known in the mines as "yellow label" or "sulphur" squibs.

No. 2 Squib

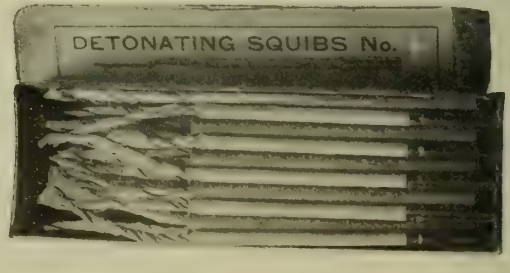
is similar to No. 1 described above, but is made specially for the deep pitching veins of the anthracite coal fields.

No. 3 Squibs

are intended for use in "fiery" or gaseous mines. The match burns with an ember which will not ignite gas. Touch paper is furnished for lighting the match. Boxes have red labels and the squibs are called by the names "gas" or "touch squibs".

Squibs for Exploding Dynamite and Permissible Powder

Nos. 1, 2 and 3 are for use with black powder. For use in exploding dynamite and "permissible powder" we offer our No. 6 Detonating Squib, made under patents of the Atlas Powder Company. This



squib is complete in itself, ready to place in the needle hole as it comes from the box, and takes the place of blasting cap and fuse or electricity. It is simple, reliable, effective and is the cheapest method of firing charges requiring a detonator. These squibs are packed in cases weighing forty pounds. A case contains forty boxes of twenty-five squibs each—1,000 squibs to the case.

Nos. 1, 2, and 3 squibs are carried by all railroads as freight or express without restrictions.

Detonating Squibs are subject to same railroad regulations as blasting caps, but we can usually ship within two or three days from receipt of order.

UNITED STATES POWDER CO.

MANUFACTURER OF

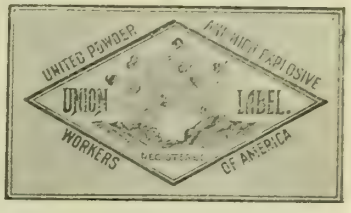
UNION MADE BLACK BLASTING POWDER

Home Office: Terre Haute Trust Building, Terre Haute, Ind.

Factory at Coalmont, Ind.







The manufacturers of the United States black blasting powder claim several points of superiority for this brand. That is what every manufacturer does for his particular brand as a rule. Under the circumstances it is rather surprising to know how seldom the purchaser or consumer of black blasting powder makes careful examination or tests with a view of proving or disproving the manufacturer's claims.

In the manufacture of U. S. black blasting powder, the greatest possible care is taken to purchase only the best grades of raw material; to thoroughly incorporate the ingredients during the mixing process; to press these into an extremely hard cake; to glaze each grain with a bright, moisture-resisting layer of plumbago; and to finally screen the powder in a careful and systematic manner which insures a grain of uniform size.

The U. S. Powder Co., has spent a great deal of time and money in standardizing the size of its grain. Taking the Illinois mining laws as an operating standard, this company has for some years turned out the different sizes of black powder with almost the same uniformity as if the grains had ben moulded in the same mould. By examining the picture printed down the center of our page you will be struck immediately by the remarkable uniformity in the grains of powder in each size. This picture is a faithful photographic reproduction of U. S. black powder, actual size, and shows the five standard sizes which are most popular among coal miners.



ILLUSTRATIONS ARE ACTUAL SIZE OF GRAINS

Not only has the U. S. Powder Co. taken the greatest pains to use the screens which will produce the regular sized grains, but its chemists have periodically made analyses of the different grains of powder in order to check up the factory work and make sure that each grain was of uniform composition with each other grain. Not only has the composition and size of grain received attention but apparatus has been devised and built for the purpose of determining the specific gravity or weight of the powder; in other words steps have been taken to make the U. S. Brand an absolutely standard article.

The fact that the U. S. Powder Co. has employed only skilled and experienced Union Labor at its plant since it started in business has contributed not a little to the successful operation of the manufacturing processes in every department, resulting in the recognized superiority of this product.



MINE LIGHTING SECTION

The following manufacturers have catalogue descriptions in this section:

Canada Carbide Sales Co.
Concordia Safety Lamp Co.
Edison Storage Battery Co.
Hirsch Electric Mine Lamp Co.
Hughes Brothers.
Justrite Mfg. Co.
Macbeth-Evans Glass Co.
Mannesmann Light Co.
Milburn, Alex., Co.
Simmons, John, Co.
Witherbee Igniter Co.
Wolf Safety Lamp Co. of America, Inc.

For additional descriptions of Mine Lighting Equipment, not appearing in this section, refer to Index of Products in front of book.

HIRSCH ELECTRIC MINE LAMP CO.

Originators of the Miners Electric Cap Lamp

320 North 12th St., Philadelphia, Pa.

Pittsburgh Office, 328 Diamond St.

Manufacturers

Hirsch Electric Safety Lamps

Products.

"Hirsch" Electric Cap Lamp, "Hirsch" Electric Mule Lamp, "Hirsch" Electric Trip Lamp, "Hirsch" Electric Signal Trip Lamp and Bell.

Hirsch Electric Safety Lamps

win by merit. The many thousands in use today afford positive proof of their great safety and efficiency.

They are cheaper to maintain than oil or carbide lamps. Burn for twelve consecutive hours or longer with a clear white light obtained by the use of a tungsten lamp. Practically foolproof, as the lamp is automatically extinguished the instant the reflector breaks.

"First Permissible Electric Cap Lamp."

"Approved by U. S. Bureau of Mines."

"Approved by the National Board of Fire Underwriters."

Storage battery easily recharged.



The miner is not encumbered in his work. Permissible for use in Gaseous Mines.

"Hirsch" Electric Mule Lamp.

Save your Mules. Prevents Loss of Mules from accidents by having this bright light in front of them. More carloads of coal hauled out of mines. Your driver will do more work under safer conditions.



Electric Mule Lamp (complete) Weighs only 3 lbs.

This simple lamp carrier for Mine Mules was devised by Mr. Douglass, stable boss of the New River Colleries Co., Eccles, W. Va., and the right of manufacturing same given to our Company. The New River Colleries Co. use them with great success on all of their Mules.

Comfortable.

No Smoky Oil Lamps—No Refilling with Oil. Bright Light wherever the user turns his head and wants it.

Durable.

Strong, Rugged and Fool-Proof. Has stood the test for years of service.

Economical.

Costs less than oil or carbide. Storage batteries easily and quickly recharged—Low cost of maintenance.

"Hirsch" Electric Trip Lamp.

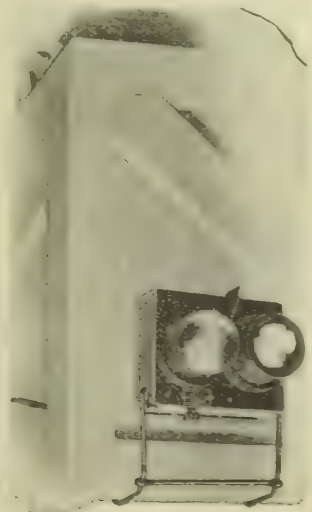
For Mine Cars and Locomotives. Prevents accidents, will not blow out, weighs complete 6 pounds, lights for 12 hours continuously on each charge, or longer if turned off as required. Gives a bright red or white light; non-spillable; easily recharged; guaranteed.

"Hirsch" Electric Trip Lamp and Bell.

For use on Mine Cars and Locomotives. Gives both bright red light and Bell rings loudly at the same time. Prevents loss of life.



Electric Trip Lamp.



Electric Signal Trip Lamp and Bell.

CONCORDIA SAFETY LAMP CO., Inc.

Manufacturers of

ELECTRIC SAFETY LAMPS FOR MINES

OF WHICH 150,000 ARE IN DAILY USE.

Manufacturers Building, Pittsburgh, Pa.

Products

We manufacture the following: "Ceag" Electric Safety Hand Lamps (see illustration); "Ceag" Electric Safety Cap Lamps (see illustration); "Ceag" Electric Safety Trip Lamps (see illustration); Rescue Stations; Charging Equipments; Lamp Racks; Magnets; Complete Lamp Cabins.

Awards for "Ceag" Lamps

The only portable electric hand lamp approved for safety, practicability and efficiency in general service, under Schedule 6A, by the U. S. Bureau of Mines.

First Prize in the British Home Office Competition, 1912, as best miners' electric safety lamp out of 197 lamps submitted.

First Prize and Gold Medal at the World's Exhibition at Ghent in 1912.



Type RS
14—16 Burning Hours—3 C. P. Total Weight 5 Lbs.

Safety

No ignition of inflamable gas is possible either inside or outside of the lamp. No liquid can be spilled and gas generated by the accumulator is allowed to escape easily. Lamps can be opened only by electro magnet in lamp house and therefore no tampering with lamps or short circuiting is possible. Lamps will not burn unless assembled right—therefore, absolutely FOOL PROOF.

Charging Arrangements:

With our charging arrangement from 1—80 batteries (electric storage battery, lead acc. type) can be charged at one time on 110 or 250 D. C.



Type R

U. S. Bureau of Mines Approval 12. 16 Burning Hours—1½ C. P. Total Weight, 5 Lbs.

More than 150,000 of these lamps in daily use all over the world.

Price List

Type R Lamp	$6.50
Type RS Lamp	8.00
Type RM Lamp	8.00



Type RM
16 Burning Hours—3 C. P. Total Weight, 3¼ Lbs.

Durability

Lamps built to stand rough usage, materials used not liable to deterioration by corrosion. Only best material used, and all parts easily exchanged, assembled and cleaned.

Light and Maintenance

Strong and well distributed light for sixteen burning hours on one full charge. Creates better working conditions. Increases output. Protects miners from eye disease. We guarantee maintenance cost. Consult us for expert advice on anything pertaining to electric safety lamps.

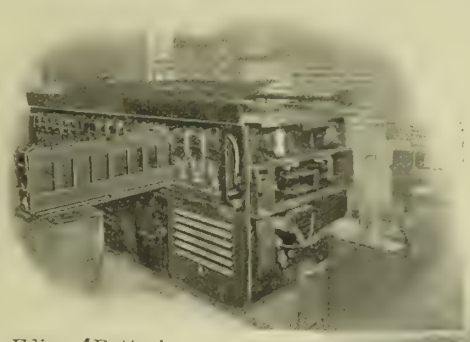
WRITE FOR FULL PARTICULARS AND CATALOGS.

Edison Storage Battery Company

Main Office and Factory

232 LAKESIDE AVENUE, ORANGE, N. J.

The Edison Nickel-Iron-Alkaline Storage Battery which, as its name suggests, is radically different from every other kind of storage battery, is constructed throughout of nickel-plated sheet steel. The positive active material (nickel hydrate) is contained in perforated, seamless steel tubes; the negative active material (iron oxide) in perforated box-like steel pockets. These receptacles are secured to nickel-plated steel grids. The plates are assembled on nickel-plated steel pole pieces, positive on one and negative on another and locked in permanent position by nuts on the end of the connector rods. These groups are "sandwiched" together; insulated from each other by strips of specially prepared hard rubber and the assembly placed in a steel container with more special insulators that prevent any electrical contact with the container. The top, also of steel, is welded on by the oxy-acetylene process, the same process by which the bottom and side seam of the container are welded, thus making the container for the Edison Cell a one-piece product.



Edison Batteries.

Simplicity and Ruggedness

The holes through which the poles protrude are hermetically sealed. The only opening in an Edison Cell is an aperture in a valve box mounted on the top through which distilled water or renewal solution may be added.

The poles are tapered to fit correspondingly tapered holes in the lugs of Edison connectors. These lugs are held tightly in position by nuts screwed on the tops of the poles, making a perfect electrical contact which eliminates all necessity for brazing or "lead burning."

The Edison Cell is not permanently injured by short circuits nor from standing idle in a charged, discharged or semi-charged condition. Its rugged mechanical construction eliminates injury from vibration or concussion or from buckling of plates. Bulletin 1125 describes many of its applications.

The Edison Electric Safety Mine Lamp

is equipped with two Edison Cells, connected in series, and fitted into a light rust-proof metal case 6⅝ inches high and 6 x 1¾ inches horizontal dimensions. A twin-conductor, rubber-covered, amply-armored cable connects the battery to a cap lamp which consists of a nickel-plated brass reflector provided with a hook to fit into the miner's cap. A Tungsten Lamp is forced into a spring socket in such a way that if the lamp be broken the base is immediately disconnected and the filament extinguished.



The Edison Electric Safety Mine Lamp.

The Edison Electric Safety Mine Lamp is the first to be approved by the Bureau of Mines "for safety and for practicability and efficiency in general service" under Schedule 6A from which we quote briefly:



Locomotives Equipped with 4-Year Old Edison Batteries.

"Hand lamps and the head-pieces of cap lamps will be dropped 10 times upon a concrete floor from a point 6 feet above it. As the result of these dropping tests there must be no breakage of the battery jar nor material distortion of the casing of the battery or of the shell of the headpiece. * * * * The dropping tests of the headpiece must demonstrate that the safety devices will not operate unnecessarily.

"Cap lamps will be dropped 10 times upon a wooden floor from a point 3 feet above it. There must be no breakage of the battery jar nor material distortion of the casing."

The Edison Safety Mine Lamp is odorless. The solution is not spilled even when the lamp is violently shaken or even inverted. Special charging rooms are never required. All the characteristics of the Edison Cell are common to the Edison Safety Mine Lamp, which is described in Bulletin 1234.

Edison-Equipped Storage Battery Locomotives

Gathering work, short and frequent hauls, infrequent heavy hauls and the usual rough service met with in mine work are conditions in modern mining practice that demand electric storage battery mine locomotives equipped with storage batteries of rugged mechanical construction.

The all-steel Edison Alkaline Storage Battery by virtue of its sturdy characteristics is used in one-half of all the storage-battery mining locomotives of this country. A description of this service is given in Bulletin 1023.

WITHERBEE IGNITER COMPANY

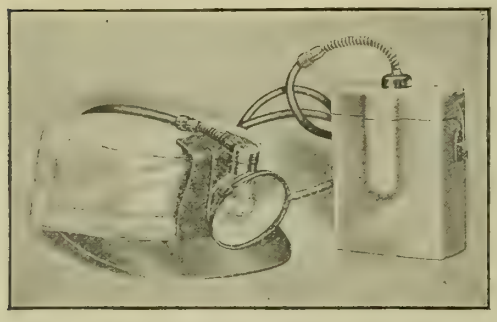
Manufacturers of

WICO SAFETY ELECTRIC MINE LAMPS

Main Office and Factory, Springfield, Mass.,

Eastern Representatives
RIVENBERG-BLACKWOOD CO.
Coal Exchange Bldg., Scranton, Pa.
5085 Jenkins Arcade, Pittsburgh.

Western Representatives
THE WESTERN SALES AND SUPPLY COMPANY,
Gas and Electric Bldg., Denver, Col.



Approved by U. S. Bureau of Mines for Use in Gaseous Mines.



Safety and Economy First

The lamp which provides a satisfactory, safe light at the lowest possible cost, considering first investment plus up-keep, is the one **you** will eventually purchase, and that is why we believe you will eventually install WICO lamps.

It is impossible to over-emphasize the importance of our having thousands of lamps in **successful** service and remember we began to sell them in quantity before most of the other makes now on the market were heard of. Our statements are based on this experience and it is unnecessary for us to point out the advantage in comparison with claims based on the results of a few experimental samples.

It has been shown during the last five years that a properly made lead battery when charged by a person with the knowledge of the simple requirements, will produce current at a less cost than any other battery. You will find that you do not need to pay a premium for insuring your battery lamps against destruction in the charging room, because the employees who are competent to look after your safety lamp equipment can and will learn the business of caring for lead batteries without the slightest difficulty.

As it seems certain that you will soon want to equip your mines with electric lamps, we will appreciate it if you will drop a line to our nearest office and have our representative send you our literature or call on you if you desire. Permit us to assure you that we have a **business** proposition, we appreciate the necessity for economy as well as safety and we want to help you to kill the two birds with one stone.

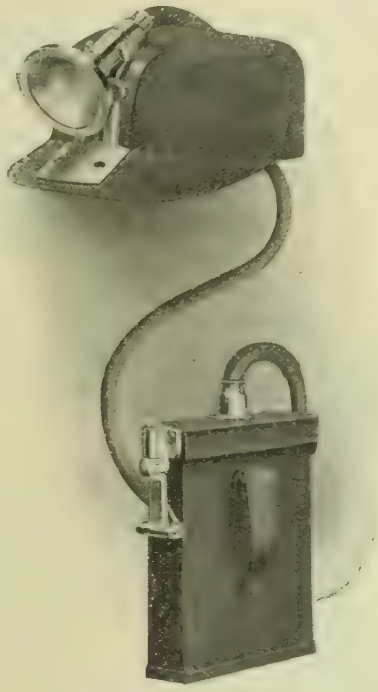
Mannesmann Light Company of America, Inc.

NEW YORK N. Y.

Products

Manlite Electric Safety Cap Lamp.
Manlite Electric Safety Mule Lamp.
Manlite Electric Safety Trip Lamp.
Manlite Charging Stand.
Manlite Lamp Stand, Etc.
CEAG Electric Safety Hand Lamp.

The "MANLITE"



Safety

The Manlite Electric Safety Cap Lamp is absolutely explosion proof owing to its safety device. The Bulb is pressed by the lens against the safety device, which closes the circuit, and as soon as the lens or bulb is destroyed the circuit is automatically broken. Both headpiece and battery casing are locked—therefore absolutely fool proof.

Efficiency

The Manlite Electric Safety Cap Lamp gives an evenly distributed light for 16 consecutive hours without recharging. The bulbs have an average life of about 800 hours. Also long life of battery plates. Metal parts of our outfit are practically indestructible. Figures we have obtained at the different Manlite installations now operating at lowest possible maintenance cost verify our claims.



Manlite Approval.
Under Schedule No. 6-A.

Durability

The Manlite Electric Safety Cap Lamp has a headpiece weighing only 4 ozs. The cable is protected by a leather sleeve, and a mechanical device prevents the cable from being twisted; a reliable cable connection is therefore obtained. Owing to the transparent vessel of the battery the plates can be continuously watched while on charge, and it can be instantly determined when the battery requires cleaning. The battery casing is made of steel and specially treated to prevent corrosion, and is magnetically locked. The belt hook allows an easy attachment of casing to belt.

Weight of complete outfit only 3½ lbs.

Recharging

The Manlite Battery can be easily recharged with use of Manlite charging stand. Charging of batteries with reversed poles is absolutely impossible. All our charging stands are fitted out with automatic circuit closers.

Our Booklet No. 10

will be sent to your address free of charge on request.

Ask for our **rental proposition,** which holds the approval of the largest mining companies.

HUGHES BROTHERS

Manufacturers of all Types of

Miners' Safety Lamps

420 North Main Avenue SCRANTON, PA.

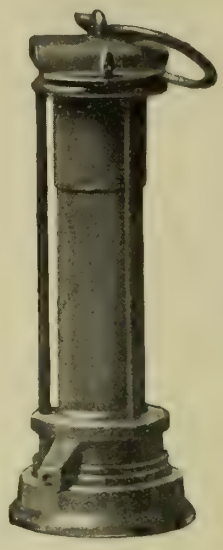
PRODUCTS

Miners' Safety Lamps and Supplies of all kinds.

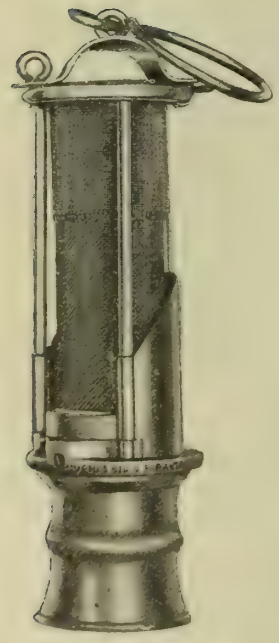
GENERAL.

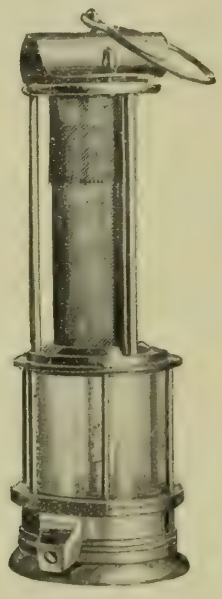
Safety first. You have every assurance that safety is first when using these lamps which have stood the test of Quality, Strength and Durability for over fifty years.

For complete line of lamps send for catalogue.





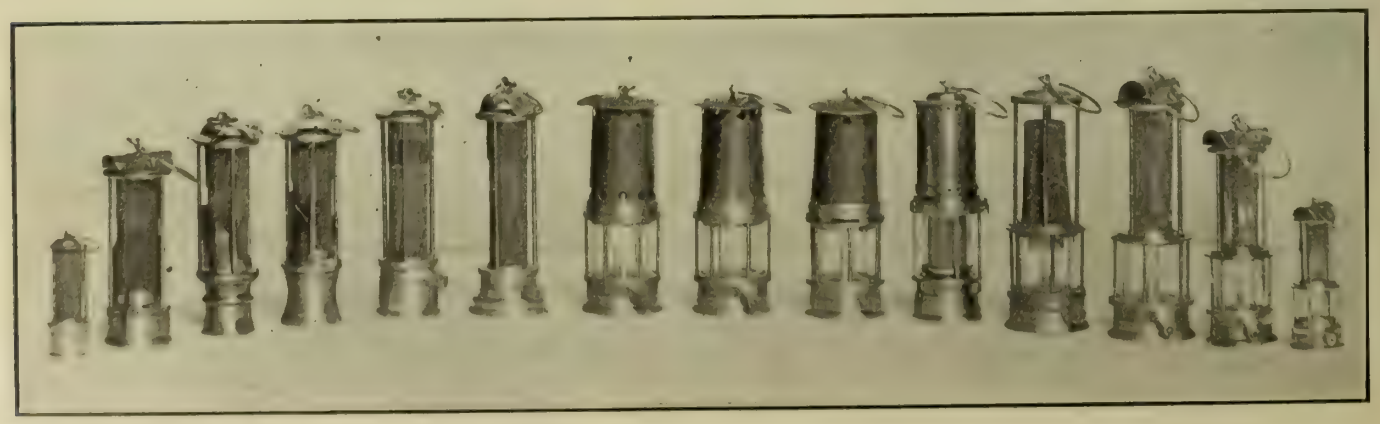






Pathfinder Acetylene Lamps.

The Lamp shown is our Cap or Head Lamp. It is constructed from extra heavy sheet brass, drawn into solid shells. There are no seams or joints on the outside to cause leaks. The valve seat is also a drawn shell, and the needle valve is made from a solid piece of rod, in such a way, that it conducts the water to bottom of carbide chamber, without any possibility of choking off the water supply. Our claims for these lamps are that they are the strongest upon the market, and will burn more steadily. One extra chamber furnished with each lamp.



Wolf Safety Lamp Company of America, Inc.

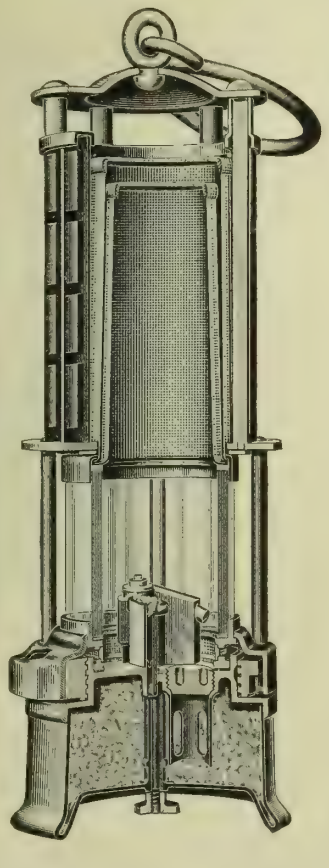
47-49 West Street, New York City, N. Y

Special Selling Agents

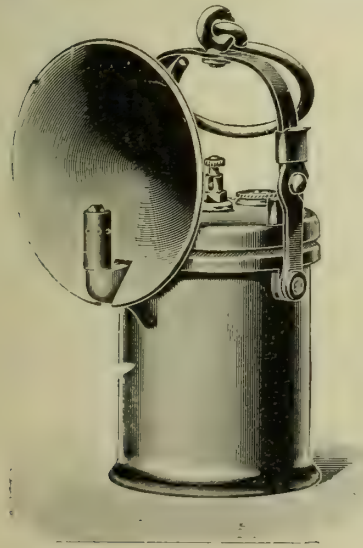
Draeger Oxygen Apparatus Co. Pittsburgh, Penna.

Wolf Miners' Safety Lamps

Burn naphtha. Such lamps are equipped optionally with paraffin or metal spark igniters, round or flat-burner wick. Magnetic locks add greatly to their safety. Lamps with key-lock can also be furnished for the use of officials. We especially recommend Wolf Metal Spark Pins to be used with the Wolf Metal Spark Igniters. These pins carry our guarantee. Wolf Lamps may be furnished either with flat-bonnet or corrugated shield, and will protect the lamp from any velocity of air current. We also have Acetylene Safety Lamps with paper friction igniters only.



34,109 out of 43,355 Safety Lamps in use in the Bituminous District of Pennsylvania are Wolf Safety Lamps, and the residue (9,246) are of six different makes. These are figures from the report of the Department of Mines of that State. The blazing truth of these figures is that the Wolf Lamp has the confidence of all careful operators. Isn't a company with such efficient service and a lamp that has so fully demonstrated its quality, worthy of your confidence?



Wolf Acetylene Hand Lamps

Used by mines that insist on greater output. The Wolf Acetylene Hand Lamp by giving more light, increases the production of the miner. That's why Ray Consolidated, Phelps, Dodge & Co., Miami Copper Co., Inspiration Consolidated and hundreds of other leading mining companies use it. That's why you should use it. Careful mining men have demanded this lamp until 1,000.000 are in use. Its steady light of 10 candle power resists air currents Strongly and simply constructed—one lever only for water and gas regulation.

Wolf Acetylene Cap Lamps

This lamp goes on about its business and your business without constant attention. Like the rest of our products, this type cannot be excelled in workmanship and gives the maximum results expected.

Wolf Electric Safety Lamps

This type for miners is our latest specialty, on the development of which our experts have devoted many years. Electric Lamps are furnished for hand or cap in several different designs. Both Electric Hand and Cap Lamps are equipped with Key or Magnetic Lock. The latter absolutely preventing unlawful opening by the miner.



We are equipped to furnish all accessories for lamps and can give complete expert information on your particular lamp problem, if requested.

Separate catalogue of each style of lamp.

MACBETH-EVANS GLASS COMPANY

Pittsburgh, Pa.



Branch Offices

New York	143 Madison Avenue	St. Louis	Laclede Gas Light Bldg.
Chicago	172 West Lake Street	San Francisco	Rialto Bldg.
Philadelphia	42 South Eighth Street	Cincinnati	Pickering Bldg.
Boston	30 Oliver Street	Cleveland	1900 Euclid Bldg.
Macbeth-Evans Glass Company, Ltd.		160 Bay Street, Toronto, Canada	



Macbeth "High Speed" Glasses for Miners Safety Lamps

These glasses are the most heat-resisting ever made. They stand the tests required by the British Government and have been subjected to tests even more severe.

They may be put into boiling water, left there to become thoroughly heated to 212°, then immediately plunged into ice water. For flame test, a flame can be directed indefinitely against the sides of the glass without breaking.

These tests are very simple and can easily be made.

Macbeth "High-Speed" glasses have been adopted as standard by such well-known companies as

Keystone Coal & Coke Company,
H. C. Frick Coke Company,
Pittsburgh Coal Company,
Vesta Coal Company,

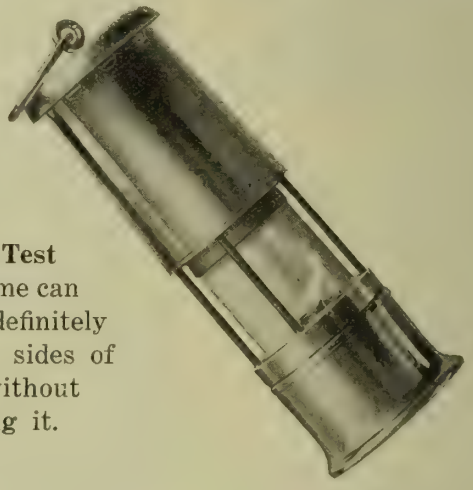
and many others. Coal mining companies report that breakage has been cut down more than fifty per cent. Any breakage which has occurred has been entirely due to such accidents as striking the



glass (not the lamp) against sharp edges of rock, or being struck by miners' implements.

In the very rare cases of this glass breaking the broken piece does not fall out, but stays in place — thus retaining the safety feature of the lamp.

Macbeth "High-Speed" glasses are made in the following sizes, for the following well-known lamps:



Flame Test
Flame can play indefinitely against sides of glass without breaking it.

No.	Lamp.	Dimensions.
2100	Wolf	2 5/16 x 2 5/16″
2100	Koehler	2 5/16 x 2 5/16″
2100	Seipple	2 5/16 x 2 5/16″
2085	Clanny	2½ x 2⅜″
2114	Marsant	2¼ x 2⅜″
2115	Ackroyd & Best	2¼ x 2⅝″
2118	Clanny Surveyors	2 x 2 ″

Colored glasses (red, green, yellow or blue, or Alba, white, a diffusing glass) are made in the same sizes.

"High-Speed" is a very economical form of insurance, reducing accidents, with all their frightful results and heavy costs, to the minimum.

It is also the cheapest way to buy glasses—not per piece, but by the year. The breakage is so small.

Write for further information and prices.

THE ALEXANDER MILBURN CO.

BALTIMORE, MARYLAND

Branches and Agencies in All Principal Cities

Manufacturers of

Carbide Mine Lamps, High Power Portable Acetylene Lights, Oxy-Acetylene Welding and Cutting Apparatus.

Carbide Cap Lamps

This lamp is more sturdily built than the ordinary lamp of its kind and has several unique features contributing to long, satisfactory service.



Height 4 in.
Diameter 2¼ ins.
Weight empty 5 ozs.
Weight Charged, 8¼ ozs.
Carbide Charge 1½ ozs.
25 Candlepower.
Full description in Bulletin 58.

The flaring sides and wide mouth of carbide chamber make dumping of spent carbide easy, preventing bending of shell in knocking it out. The screw threads at the waist are generous, so the connection is strong and easily made, even in the dark.

The special funnel top greatly simplifies filling with water, and a tight water cap positively closes the water chamber. The water feed is controlled by a turn of the water feed rod.

Two stout seamless drawn-brass shells make up the principal parts of the lamp. The cap hook passes through the shell and is strongly attached inside. The water-feed tube and water-feed rod are stout and strong.

The reflector is made of sufficiently heavy material to make it stiff and durable. It has a strong cylindrical reinforcement at the back, making it practically unbreakable. The reflector may be removed from the lamp by unscrewing.

The lamp is equipped with a positive-acting friction lighter. It burns a half shift on one charge. The flame is strong, steady and uniform, with no smoke or soot.

Price $1.00 each. Discounts on quantities.

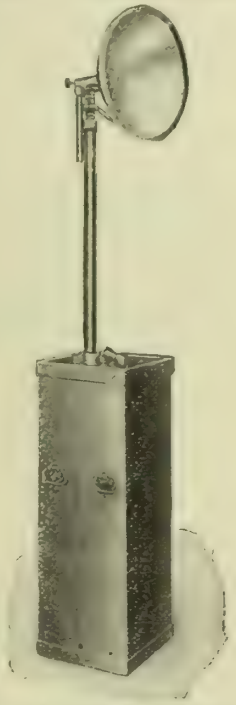
High Power Portable Acetylene Lights

These lights are self-contained portable units, giving 15,000 candle-power or more. They are storm-proof, smokeless and are instantly lighted. They have no pumps, gauges, mantles, or delicate parts, and require no connections. They are entirely automatic, easily handled by an ordinary laborer and need no attention while in use.

Only water and carbide are necessary to operate them. The carbide charge is placed in a cylinder which is immersed in the tank. Gas is thus automatically generated and steadily supplied to the burner.

The "3X" Light operates a full night shift without recharging. If a longer period is required, extra carbide cylinders are supplied. Nearly 20 other standard styles are made for various purposes.

These lights are in use everywhere and are sold under a strong guarantee.



"3X" Portable Light.
Tank 12x12x36 in.
Total Height, 6 feet.
Reflector, 15 inches.
Weight Empty, 90 lbs.
Weight Packed, 121 lbs.
Carbide Charge, 16 lbs.
Costs 4 to 6c per hour.
Full description in Bulletin 28.

Oxy-Acetylene Welding and Cutting Apparatus

In efficient mining operations, oxy-acetylene apparatus is almost indispensable, in view of savings which can be effected in the repair of machinery. There are also many occasions where it is a great source of economy in construction, replacing riveted and other connections.

Milburn Oxy-Acetylene Plants include a large variety of types covering all service from small emergency repair outfits to complete manufacturing installations.

The emergency outfits employ both gases in steel storage tanks. Larger repair plants employ acetylene generators with economy.

Plants equipped with acetylene generators are supplied either truck-mounted or stationary in a number of sizes. Such plants will supply one to a number of working stations.

Plants may be equipped for welding only, cutting only, or both operations.



Truck Mounted Oxy-Acetylene Plant.
Full description in Bulletin 38.

JUSTRITE MANUFACTURING CO.

CHICAGO, ILL.

Manufacturers of

Justrite Carbide Mine Lamps

for

Miners, Superintendents, Engineers, Drivers, Pit-Bosses, Etc.

The carbide miners' lamp is fast superceding the old smoky oil lamp. About 60 per cent of the coal miners are now using them. They are superior in lighting value, cleanliness and healthfulness and can be operated at less than one-half the cost of Oil. They are also a safer lamp as they give a pure white light equal to 16 C. P., enabling the miner to see the dangerous roofs and preventing many accidents from falling rock, etc.

This company has made many improvements in construction and method of generating and is constantly endeavoring to simplify and make them easy to operate and care for.



No. 85
16 C. P. Weight, 5 Ounces.

Miners' Cap Lamp—Lever Feed With Lighter Attachment

These lamps are drawn from seamless brass;—not soldered together—attached parts are riveted and soldered on inside, making the JUSTRITE the strongest and most durable lamp. Reflector is part of the lamp, cannot get loose or be broken off. The No. 85 type is equipped with a sparker which lights the gas instantly with a rub of the hand. The Lever regulates the water feed, prevents clogging and saves carbide.

This style lamp finished and packed as follows:

No.	85 Polished Brass with No. 77 Carbide Can	$1.00
No.	57 Polished Brass with Extra Bottom	1.00
No.	89 Gun Metal Finish with No. 77 Carbide Can	1.00
No.	59 Gun Metal Finish with Extra Bottom	1.00
No.	258 Polished Brass with No. 77 Carbide Can	1.00
No.	268 Polished Brass with Extra Bottom	1.00
No.	259 Gun Metal Finish with No. 77 Carbide Can	1.00
No.	269 Gun Metal Finish with Extra Bottom	1.00
	(No. 258, 259, 268 and 269—Large 2⅝ inch Reflector.)	
No.	86 Nickel Plated with No. 77 Carbide Can	$1.25
No.	58 Nickel Plated with Extra Bottom	1.25

Miner's Cap Lamp—Lever Feed

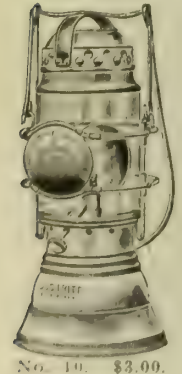
Same size and capacity as No. 85, with 2-inch German Silver Reflector, without Lighter attachment.

Our No. 26, 27, 25 and 225 Reflector and No. 15 Hood can be used on this lamp.

Weight, 4¾ ounces.

No. 80. Polished Brass $1.00
No. 81. Nickel Plated 1.25
with Extra Bottom.





No. 10. $3.00.

Justrite Acetylene Lantern

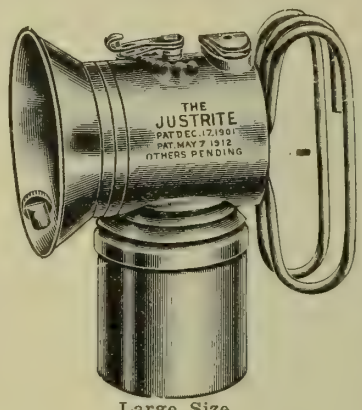
Gives a 20 candle-power light. Burns 5 to 6 hours with 3 ounces of carbide. Flame is controlled by the valve and can be turned high or low or extinguished as desired. Made of brass throughout, nickel plated and highly polished. **No complicated parts to get out of order and very easy to operate.**

The only successful automatic generating acetylene lantern.

Suitable for **Mine Superintendents, Inspectors, Mining Engineers, Watchmen, Timekeepers.**

Superior to any portable light in **cleanliness, safety** and **candle-power. Will not blow out.**

Controls the Gas—Automatic Generator.



Large Size.

Superintendents' Lamp With Lever Feed, and Lighter Attachment

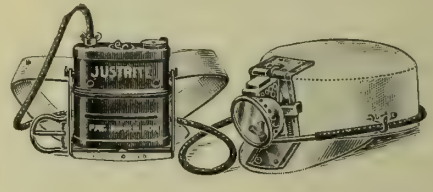
3 in. Nickel Plated Reflector, large folding handles and hook, including our No. 76 carbide container. The water tank and carbide container are large, holds 3 ozs. of carbide and will burn 5 hours with one filling.

16.7 Candle Power, weight 7 ounces.

No. 95 Nickel plated, highly polished $2.00

Small Size

No. 100 Nickel plated, burns 3 hours $1.50

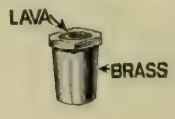


No. 44 Justrite Headlight, $3.00

Drivers' Lamp

The generator is fastened to belt with tube connecting to the lamp on cap. The head lamp is very light (5 ounces) and the flame is covered by a strong lens, projecting a strong light about 150 feet. Burns 10 hours with one filling and very easy to operate. The generator is made of pressed steel—is light but strong. Weight 1½ lbs. The outfit comprises: Generator, Canvas belt, Rubber Hose covered with silko fabric, Headlight, with nickel plated brass hook and spring clasp.

New Metal Tip—"The Jewel"



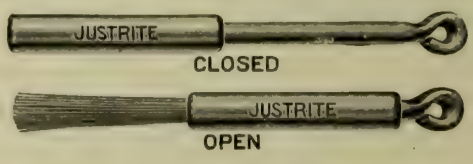
A perfect Metal Tip—Shell is made of **brass** with an imported Lava burner insert, combining the best qualities of the Metal and Lava Tip—cannot break or crack—easy to put in and take out.

Will fit any Justrite lamp.

No. 28. Price 05c.

Justrite Wire Brush Cleaner

50 strong steel wires.



No. 37. Price 10c.

NO SMOKE, NO GREASE, MORE LIGHT, CHEAPER. SEND FOR CATALOG.

JOHN SIMMONS COMPANY

Manufacturers

Baldwin and Zar Carbide Lamp

(The Miners' Lighting Bug)

San Fransisco, Cal. NEW YORK Montreal, Can.

Baldwin lamps are made in a variety of sizes and styles. There's a Baldwin for every mining need; should special requirements make necessary a lamp other than those shown in our regular catalogue, we are prepared to make up, upon request, anything in the line of lamps which may be required.

Upon request we will send catalogue showing our complete line of lamps, reflectors, carbide containers, etc.

While we manufacture and sell a great number of hand regulated lamps, our best sellers are those fitted with the Baldwin Patented Automatic Water-feed. Tests and comparisons made by mining men have proven that a self-regulated water feed is best.

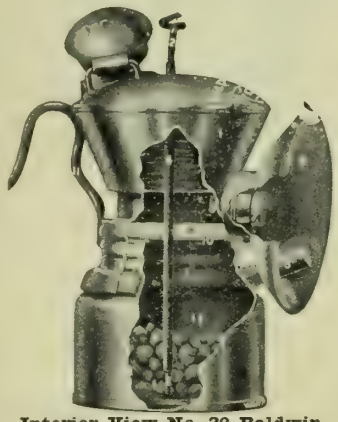
The quantity of water required depends entirely upon the quantity of gas contained in the carbide—this varies and while the variation is slight, it must be remembered that only 1/16 of a cubic inch of gas is consumed per second and that less than a half a drop of water per second may be all that will be required. As the quantity of water cannot be determined in advance, a hand regulated device cannot give as satisfactory service as one wherein the water flow is controlled by the pressure of the generated gas.

The Automatic Valve requires practically no attention whatever, the carbide chamber cannot be flooded and the gas will never blow at the burner, whereas, if you fail to give a valve controlled lamp, the attention it requires, if you in any manner become careless there is waste of carbide and unsatisfactory light.

Where a valve or hand controlled lamp is desired, we can supply either our No. 25 or the Zar. These lamps have bottom valve water feeds; the water is controlled by the opening or closing of the valve.

Our No. 30 type, which includes the No. 29—30—36—38, has a shut-off valve at the bottom of the water tank. The valve, however, does not control the water flow; its function is only to shut off the water—the flow being controlled by the pressure of the generated gas.

Where a lamp is not to be worn on the user's cap and a little aditional weight is not a disadvantage, we recommend our Drawn Steel Lamps.



Interior View No. 32 Baldwin. List Price, $1.00.

Our principal claim for these lamps is "strength" and longer burning capacity.

The carbide container and water tank shells are each made of one piece of Drawn Steel, heavily tinned. The screw threads are double the heft and strength of those used on any other lamps. The hooks are welded by the oxy-acetylene process, not soldered. The reflectors are braced and strengthened by a steel reinforcing shell. As we are not limited to size or weight we can furnish these lamps with carbide containers having a burning capacity of six hours or twelve hours. These lamps can be furnished with hand hooks only, or with hand hooks and bale chains; the latter are preferred by many as the bale chain permits of the lamp hanging vertically from the wall timbers, machine or from the side of an ore car.

Reflectors on all lamps are made so that they can be detached from the lamp. We do not build them into the body of the lamp, as they are not as serviceable or flexible as a detached reflector. Our reflectors can be changed at any time if a different size or style is desired and should the reflector be damaged by a blow or a fall it acts as a buffer for the water tank, there is no danger of making the water tank leak, as there is when the reflector is built into the body of the lamp.

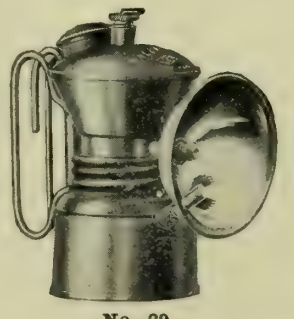
Our new brass burner overcomes the disadvantages of a cemented-in lava burner. These burners are highly efficient, they cannot break and with ordinary usage will last as long as the lamp. Should it ever become necessary to replace a burner, they are so easily taken off and replaced, that the change can be made as handily in the dark as out in the open.



No. 71, Zar.



No. 25A.



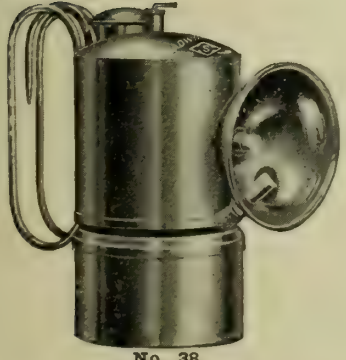
No. 29.



No. 30.



No. 32A.



No. 38.

No. 29—38—30 are fitted with the Baldwin Patented Automatic Water feed, but have in addition a water cut-off operated by turning a screw at the top of the lamp. The No. 29 and 38 are nickel plated and are used by Superintendents, Engineers, Surveyors, Samplers, Foremen and Fire-bosses.

List prices—No. 29, $1.50; No. 38, $2.00; No. 30, $1.00.

No. 32—This is the most generally used lamp made. It is equipped with the Patented Automatic Water feed and gives the most satisfactory service with least attention from the user.

List price—$1.00.

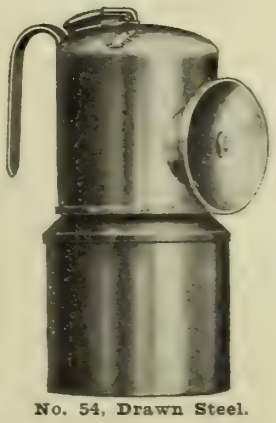
No. 25A—71 Zar, these are unquestionably the most satisfactory valve controlled lamps made. The water feed and flame size are controlled by means of the lever at the top.

List price—$1.00.

Drawn Steel Lamps—While these lamps are mostly used in Metal Mines, they are beginning to be used very generally in the coal fields. Many are now used as motor head lights and tail lights.

Made in two sizes with hand hooks or bail chains, and can be furnished with other attachments and special reflectors.

List prices range from $2.40 to $2.85.



No. 54, Drawn Steel.

These are but a few of the sizes and styles we manufacture. If further information is desired, kindly write us.

CANADA CARBIDE SALES COMPANY

30 Church Street

NEW YORK, N. Y.



Packed in
Indestructable Green Drums.

Canadian Carbide of Calcium is a metallurgical product formed by the smelting of Lime and Carbon in an Electric Furnace under an excessively high temperature running from four to six thousand degrees Fahrenheit. In the process of smelting these ingredients are reduced to a liquid condition, elements other than the calcium in the lime and carbon in the coal being driven off in the form of gases. The liquid remaining in the crucible is tapped out in much the same manner as iron from a blast furnace. The other elements of the lime and coal having been driven off in the form of gases, there remains carbon and calcium, which is what the name signifies.

After the carbide has been drawn from the furnaces and allowed to cool, it is in large blocks of from one to two tons in a solid lump. The carbide then has to be broken up and screened to a suitable size for use in Miners Lamps.

When Canadian Carbide of Calcium is brought into contact with water an Hydrocarbon Gas is given off which is known as Acetylene and on account of this gas being so rich in carbon only a small quantity is required in order to give sufficient light. This product has now been sold in the United States for over two years and its worth is amply proven by the increase in orders placed with us by large users of carbide.

Being manufactured under the Rules and Regulations of the British Association of Engineers, the users of Canadian Carbide are assured of receiving carbide of the greatest gas yield and purity, as a standard is set and lived up to. Copies of these Rules and Regulations will be furnished upon request.



FIRST AID SECTION

The following concerns have catalogue descriptions in this section:

Draeger Oxygen Apparatus Co.
Life Saving Devices Co.
Mine Safety Appliances Co.
Provident Life & Casualty Co.
Wheeling Tent & Awning Co.

For additional descriptions of First Aid Equipment, not appearing in this section, refer to Index of Products in front of book.

THE DRAEGER OXYGEN APPARATUS CO.

422 FIRST AVE., PITTSBURGH, PA.

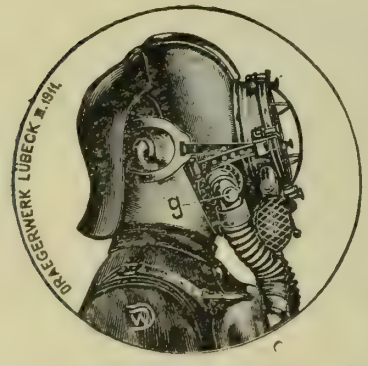
Complete Mine Rescue Equipments

and Pulmotors for Resuscitation

Agents for all Wolf's Safety Carbide and Electric Lamps



Team of five men shows part of 25 Draeger Apparatus used 59 days in fighting the mine fire of the Black Hawk Fuel Company, Black Hawk, Utah.



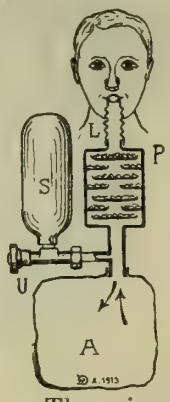
Separate pamphlet, giving letters from E. L. Carpenter, President, and J. E. Pettit, Chief Mine Inspector of Utah, upon request.

The Draeger Breathing Apparatus may be equipped with helmet, which is interchangeable with mouth-breathing type, using same flexible tube leading to breathing bag. A distinct advantage, as some men prefer helmets and some mouth pieces.



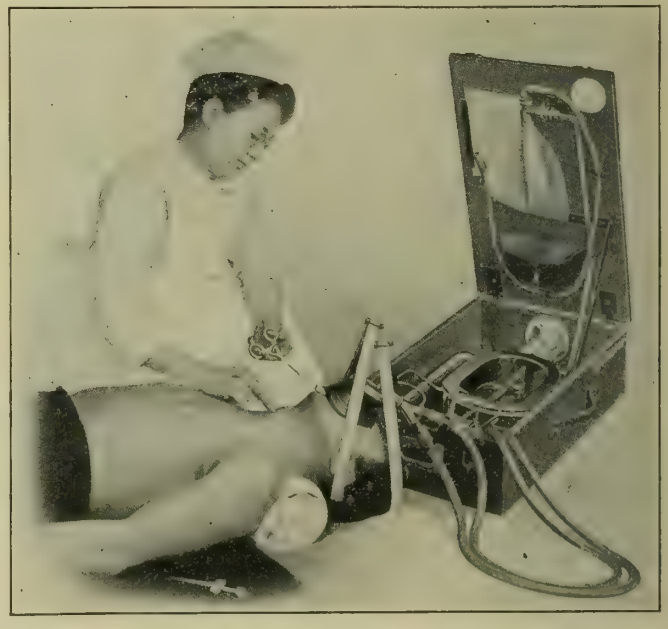
Side view shows complete protection this mouth-breathing type gives to the operator.

Separate Bulletin On All Products.



The Self-Rescue Apparatus is so simple that every mining man can easily operate it. It is inexpensive—you can well afford a half dozen of them, whether you use the larger machines or not. They might save many a life and possible damage suits.

The simplicity of the Pulmotor makes it a "Safety First" machine for resuscitation. Any of your miners can operate it. The above cut shows



method—simply clear the throat, draw the tongue well forward with forceps, adjust mask tightly over mouth and nose, open oxygen cyc. valve, and the machine does the rest.

Table of equipment in units for rescue station. Usually five breathing apparatus are installed, and small testing equipment.

Code Word.	Type.	Capacity.	No. Suggested.
Restitutor	Helmet	2 hours	Five
Restorator	Mouth Breathing	2 hours	Five
Retifix	Oxygen Cyc	2 hours	Five
Retortorum	Potash Cartridge	2 hours	50 or 100
Walhalla	Pulmotor		One each mine
Walzwerk	Pul. Cyc	11½ cu ft.	One each machine
Riberos	Refilling Pump		One
No. 30	Tanks	150 cu. ft.	Three
Reticulas	Self Rescue	30 min.	One each mine

They Are Interesting and Instructive.

LIFE SAVING DEVICES CO.

Main Office and Works
180 N. Market Street, CHICAGO, ILL
Branches:
NEW YORK, 1008 Times Bldg. BOSTON, 53 Devonshire St.
PITTSBURGH, Mine Safety Appliances Co.

THE LUNGMOTOR

What the Lungmotor Does

The Lungmotor does the very next thing to normal breathing because it supplies—mechanically—the tidal volume of air each respiration (the amount you breathe at rest)—enough air, but not so much as to possibly injure the lung tissues and the circulation, thus not leaving the patient open to pneumonia.

It is safe because it does not depend upon back pressure in the lungs to operate from inspiration to expiration and vice versa.

You can always give air.

You can give **any** mixture of oxygen and air by instant adjustment.

You can instantly adjust from newborn to largest adult.

You can at will increase or decrease respirations per minute.

You can increase or decrease air volume, or air oxygen volume per respiration.

You can work fast or slow—give small or large air volume—changeable at will.

You can help in the effort to breathe without taking off the face-mask.

You can take care of all water and mucus from the lungs in cases of apparent drowning, without removing the face mask.

You can prevent air going into the stomach **not** by holding your finger on the larynx but by a patented throat tube requiring no attention—very simple and yet **sure.**

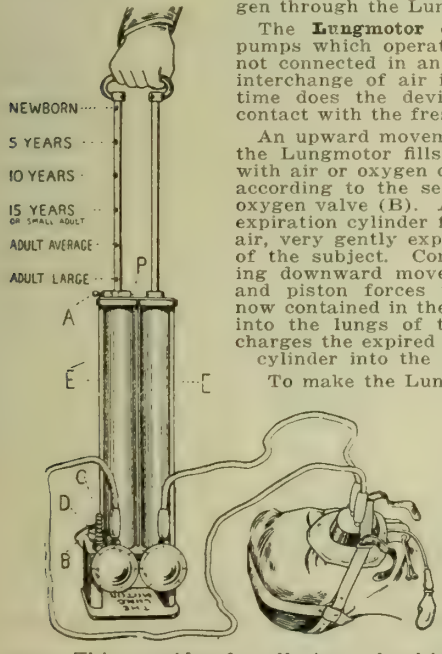
You can cause inspiration without expiration—expiration without inspiration. (This is accomplished without tracheal tubes.)

Should a face mask become damaged or the rubber pad on the face become destroyed you still can give the patient air or oxygen.

How Lungmoter Works

This cut (1) shows Lungmotor giving air only (air contains 20.96 per cent oxygen). If you want additional oxygen, you can attach to any kind of oxygen tank, not missing a single air giving stroke. When oxygen container attached, turn valve "B" (see cut 1) and you can then, by observing the volume indicator thereon, give any mixture of air and oxygen through the Lungmotor desired.

Cut No. 1.



The **Lungmotor** consists of two air pumps which operate in unison, yet are not connected in any way as far as the interchange of air is concerned. At no time does the devitalized air come in contact with the fresh air or oxygen.

An upward movement of the handle of the Lungmotor fills inspiration cylinder with air or oxygen or a mixture of both, according to the setting of the air and oxygen valve (B). At the same time the expiration cylinder fills with the expired air, very gently expelled from the lungs of the subject. Conversely, the following downward movement of the handle and piston forces the air and oxygen now contained in the inspiration cylinder into the lungs of the subject and discharges the expired air of the expiration cylinder into the open.

To make the Lungmotor available for persons of all ages and correspondingly varying lung capacities the Lungmotor is provided with adjustments for different air volume suitable for new-born, five year old, ten year old, fifteen year old or small adult, adult average and adult large. This provides for all sizes of subject.

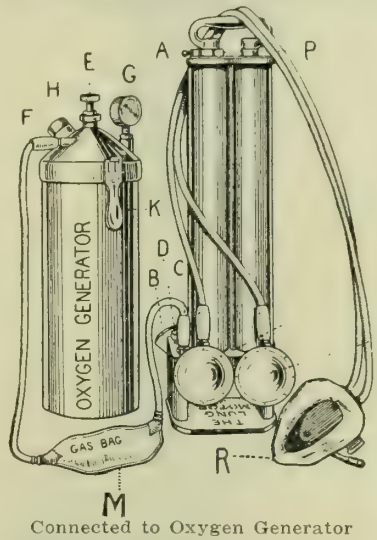
Now note volume notches on the inspiration piston rod opposite to each of the sizes of subject, viz: New-born, five years old, ten years old, fifteen years old or small adult, adult average and adult large. These volume notches are engaged by the slide pin. (A.) (See Cut No. 1) on top of the inspiration cylinder cover. This slide pin can be swung around the circle over the graduated volume, size, and stroke regulating dial, the graduations with plain marks for corresponding ages registering with the notches in the piston rod.

The Lungmotor

Cut shows the Lungmotor with Oxygen Generator and face mask ready to place on patient.

Explanation of the Cut

(A) Movable pin which turns by gently pulling and adjusts the **Lungmotor** from new-born to the largest adult.



Connected to Oxygen Generator

(B) Mixing valve, whereby all air, all oxygen or any percentage of either may be given. Always under instant control of operator by a twist of the thumb screw.

(C) Oxygen inlet.

(D) Screened air inlet valve.

Oxygen Generator which connects by tube and gas bag with the Lungmotor and makes fresh, pure oxygen alongside the subject just as needed.

(E) Needle valve which regulates the making of oxygen.

(F) Outlet for oxygen gas.

(G) Pressure gauge.

(H) Safety valve.

(P) Pointer on the movable adjusting pin (A)and tells when Lungmotor set to right size patient.

(R) Metal face mask with soft rubber covering to go over face and nose.

Anyone Can Use It

Lungmotor always available, because anybody can use it. In the recent New York City subway fire it was used successfully by persons who had never seen the instrument before.

Adopted By U. S. Bureau of Mines

In 1912 two commissions composed of technical experts and physiologists were appointed to investigate the subjects of: Resuscitation from Mine Gases and Resuscitation from Electric Shock.

The reports of these commissions, in effect, establishes a standard for devices intended for use in inducing respiration mechanically, and have attracted widespread attention.

The U. S. Bureau of Mines after the issuance of these reports stopped using Resuscitation Devices of another make and removed them from all mine rescue cars and stations, and after nineteen months of careful investigation by technical experts and physicians, has just bought Lungmotors to take their place.

The Lungmotor met physiologically and mechanically every requirement and test of these commissions.

No device ever received closer scrutiny by reason of the universal interest in, and the importance of the subject, which culminated in the reports of these two commissions. Thus, securing this order from the Bureau of Mines gave the Lungmotor a tremendous victory.

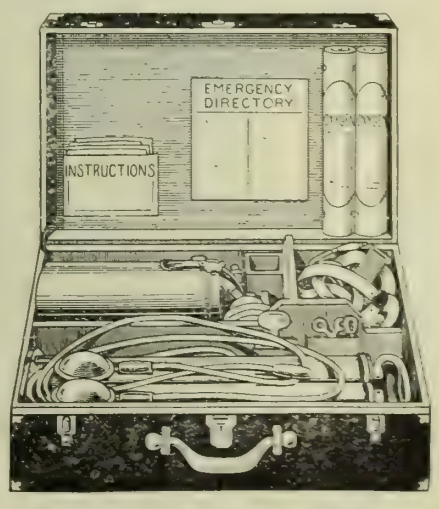
Awards

The highest awards to the Lungmotor at the Panama Pacific International Exposition, 1915, Gold Medal of Honor by Mining Jury, and Gold Medal by Liberal Arts Jury. American Exposition of Safety and Sanitation, NewYork City, 1914, Grand Prize and Gold Medal.

Lungmotor Complete in Case as **shown in cut $150.**

Lungmotor without oxygen generator, but complete for connection with any oxygen container **$135.**

Prices f. o. b. Chicago. 30 days net, 2% 10 days.



The Lungmotor Outfit Complete.

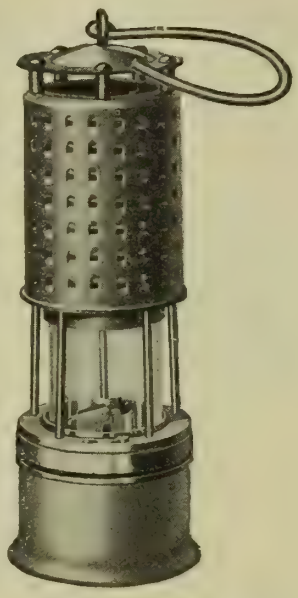
MINE SAFETY APPLIANCES CO.

541 Fourth Avenue,
Pittsburgh, Pa.

Distributors and General Agents of the following:

Koehler Safety Lamps.
Edison Electric Miners Cap Lamps.
Fleuss Proto Breathing Apparatus
The Lungmotor
Safety Lamp Testing Box
First Aid Supplies.
Hydro Recording Gauges.
Anemometers and Barometers.
Safety Signs and Signals.
Stretchers and Blankets.

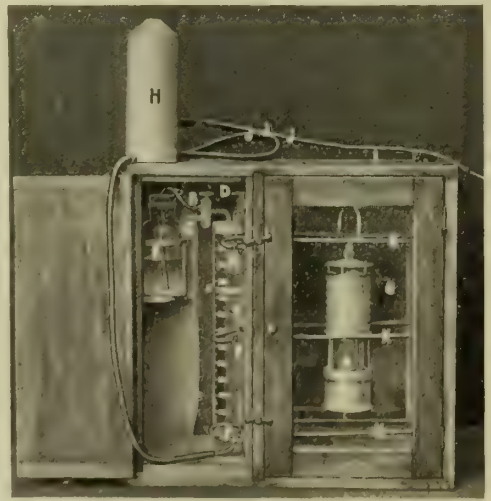
KOEHLER SAFETY LAMPS—This safety lamp has approval No. 1 of the United States Bureau of Mines and received the Gold Medal at the Panama Pacific Exposition. This lamp has a flat wick which gives 50% more illumination than any other safety lamp on the market. It is the only approved safety lamp manufactured in America. For working, traveling, or testing purposes, it cannot be surpassed.



EDISON ELECTRIC MINERS CAP LAMP—This lamp was awarded the Gold Medal at the Panama Pacific Exposition. It is approved by the Government under schedule 6 A for efficiency and practicability as well as safety. The battery is delivered from the factory electrically sealed, does not contain acid ,and renewal plates are never required. The battery carries with it a two year guarantee, something entirely unheard of in connection with any other lamp. The lamp cannot be harmed by being left in a charged, over-charged, semi-charged, or discharged condition for a short or long period of time.

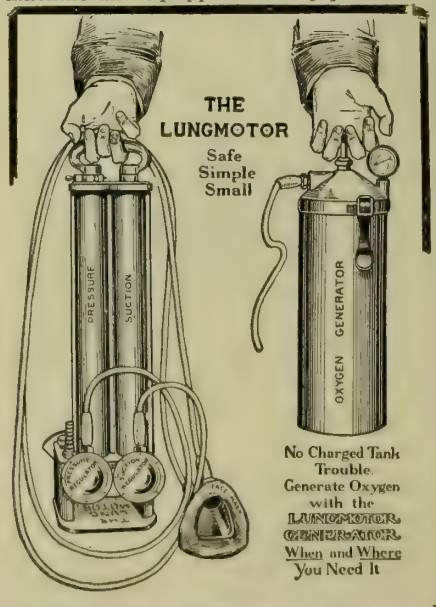


SAFETY LAMP TESTING BOX—A mechanism especially constructed for the use of Mining Schools, State Inspectors or those who desire to see just what sort of a cap appears on a safety lamp from the moment it first touches gas up to the point of the explosive limit. The box is fitted with a safety device so that an explosion can not harm the apparatus. Was awarded Silver Medal at the Panama Pacific Exposition.



FLUESS PROTO APPARATUS—This aparatus was awarded the Gold Medal of Honor at the Panama Pacific Exposition and is the only mouthbreathing, self contained type of oxygen apparatus which has been approved without change by the United States Bureau of Mines. It has the fewest possible joints and these all hang in front of the wearer. No expensive cartridge is required, costs two-thirds less to operate than any other apparatus. It is of the non-injector type. It is a positive pressure machine and equipped with by-pass valve.





The Lungmotor.
This is the only mechanical resuscitation device approved by the United States Bureau of Mines. It also received "The Gold Medal of Honor" from the International Jury of awards at the Panama Pacific Exposition. It is operated by hand, administers all air, all or any percentage of Oxygen Always available for use when needed. Used successfully in case of drowning, Electric Shock, Gas Poisoning, Asphyxia at Birth and collapse during Anathesia.

First Aid Supplies.
In addition to those manufactured by Bauer & Black, of whose material we carry in stock a full line, we carry triangular bandages and splints especially adapted for the use of miners and for teams practicing first aid work.

Hydro Recording Gauges, Anemometers and Barometers, Safety Signs and Signals.
All of the above apparatus represents the highest standard of Mine Safety Equipment. Our judgment in these matters is confirmed by the approval and use of all of them by the United States Bureau of Mines.

Further confirmation has been given by the International Jury of Awards at the Panama Pacific International Exposition in granting to these various appliances the very highest possible awards in each class in which they were entered.

This is the only Company in America dealing exclusively in safety devices for use in Coal Mines.

A TRIAL ORDER SOLICITED.

Wheeling Tent & Awning Company

Established 1891

Sole Makers

Williams' Improved Mine Stretcher

"The only Stretcher like it is another of the Same Make"

Wheeling, W. Va.

Williams Improved Mine Stretcher

This stretcher is not to be compared with the ordinary camp cots, sold by some supply houses for mine stretchers.

Advantages

By withdrawing the strap from the hinge joint in the center, (see cut) the cot parts and is slipped from under the patient without any discomfort whatever to him.

This stretcher has no metal clasps or rods to corrode or rust. Every part of it can be cleaned and when the canvas wears out a new one can be replaced as all parts are interchangeable. When folded it occupies a bag 7 feet long by 5 inches in diameter, dust proof and clean, made of closely woven White Army Duck, is **not** nailed to the handles.

This stretcher has been adopted by the foremost mining companies of the United States, Canada and Mexico, as a standard in their first aid and hospital work.

(Send for descriptive catalogue and price list.)

Tents, Awnings and Covers

Tents, Awnings and Covers made of Waterproof Canvas.

Our weather-proof tents are in a class by themselves. They are adaptable for mine camps, prospecting work, etc.

Send us your inquiries for anything in the Canvas line.

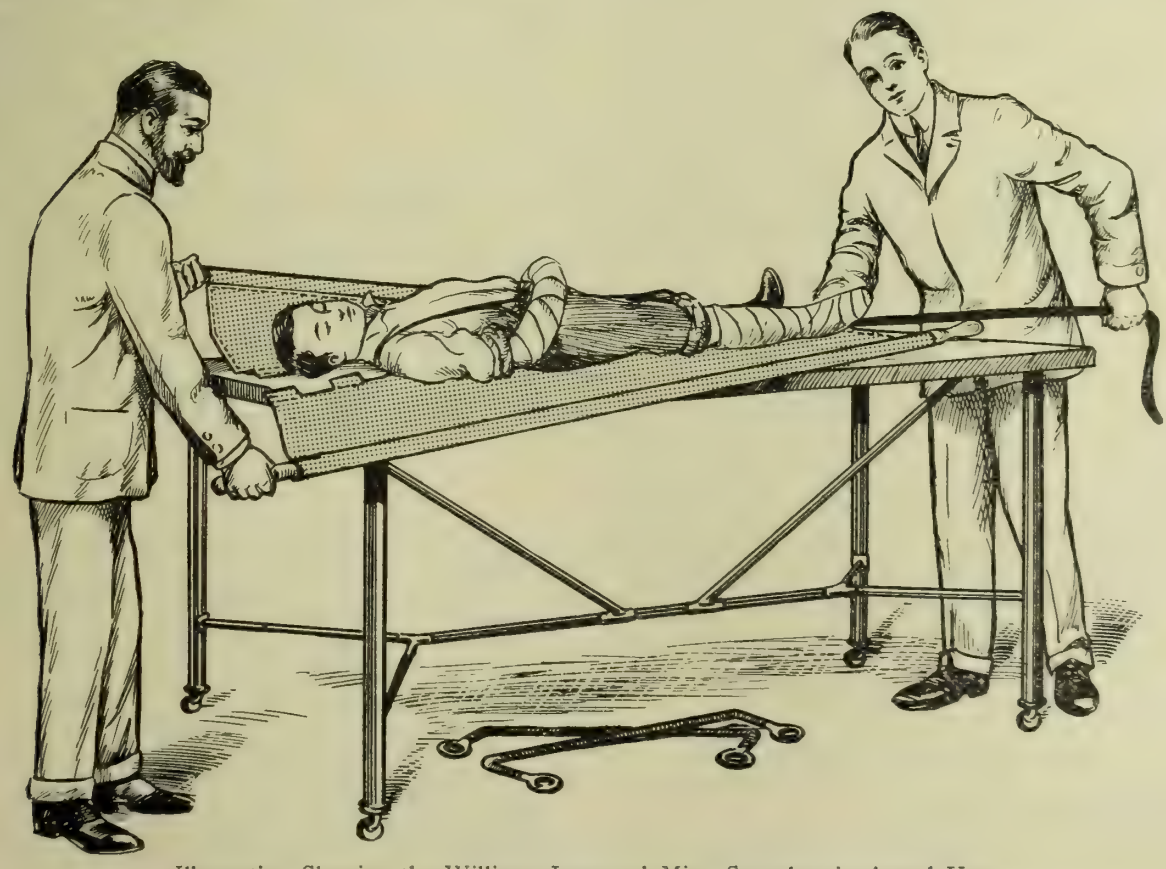


Illustration Showing the Williams Improved Mine Stretcher in Actual Use.

PROVIDENT LIFE & CASUALTY CO.

CHARLESTON; W. VA.

Accident and Health Insurance Especially Adapted to Miners, Mine Laborers and Lumbermen

We Invite Investigation From Employers of Labor Regarding Our Plan of Insurance

OUR PLAN

Our Agents solicit the application for insurance.

The applicant gives an order to his employer for the collection of premiums.

The policy is issued from the Home Office and sent to the bookkeeper or collector for delivery to applicant.

A list of policy holders is sent each month to bookkeepers or collectors where assured is employed, for collection of monthly premiums.

Claims are made out by the bookkeeper or collector and doctor, on blanks furnished, and are paid through the bookkeeper's office or the Company's collector.

The bookkeeper or collector is not liable for any premiums not collected.

This plan saves any annoying correspondence or looking up agents to secure a claim.

WE ADVANCE money on worthy claims of long duration where the proper notice has been given to the Company of the commencement of disability.

The policies contain STANDARD PROVISIONS.

REFERENCES

The following are a few of the unsolicited testimonial letters we have received. We have many others on file in our office, but lack of space prevents publication of all of them.

We take pleasure, however, in referring you to any of the coal operators or others with whom we do business, for recommendations.

We find that the Workmen's Compensation Laws recently enacted in several states have no appreciable effect on our business, and in many cases actually stimulate interest in this line of insurance.

By fair treatment and the policy of a square deal to everyone, we have satisfied both employers and policy-holders, have never lost any business by reason of our manner of conducting same, and have made a steady and healthy growth from the beginning.

SCOTIA COAL & COKE COMPANY

Rush Run, W. Va., Nov. 6, 1914.

Provident Life & Casualty Co.,
Charleston, W. Va.

Dear Sir:—

Our employees have carried your insurance for the past several years and have found your prompt settlement of claims entirely satisfactory.

You are to be congratulated, that so large a business as you do, over so large a section of country, that you have no contested claims in the Courts, but that all claims are adjusted by you to the satisfaction of the insured.

Yours truly,
SCOTIA COAL & COKE COMPANY,
G. H. Caperton, Pres.

* * * * *

LOGAN MINING COMPANY

Ethel, W. Va., June 12, 1914.

Provident Life & Casualty Co.,
Charleston, W. Va.

Dear Sir:—

Your check for the claim of Jesse Dupont received. You will find receipt attached.

Mr. Moore it is a pleasure to do business with you and your company. You are the best I have ever had any dealings with. You cannot imagine how much it helps your business to deal promptly with these foreigners especially.

Thank you.

Very truly,
EARL W. SUMMERS, Bookkeeper.

* * * * *

FOUR STATES COAL & COKE CO.

Worthington, W. Va., June 18, 1914.

Provident Life & Casualty Co.
Charleston, West Virginia.

Dear Sir:—

It gives us a great deal of pleasure to commend your company to any one desiring to take up a first class insurance. The fact that a large number of our men are carried on your list—which is growing with each month—shows that our employees appreciate it. All claims have been satisfactorily adjusted with a very striking degree of promptness.

Yours respectfully,
FOUR STATES COAL & COKE CO.,
By B. H. Brown, Jr.

* * * * *

THE CONSOLIDATION COAL COMPANY

Jenkins, Letcher Co., Kentucky,

Provident Life & Casualty Company,
Charleston, West Virginia.

Gentlemen:—

During the period over which you have been writing business covering employees of The Consolidation Coal Company, I wish to congratulate you on the expeditious and thoroughly business-like manner in which you not only handle current business, but settle claims; in many instances advancing partial payment where necessary during convalescence of the insured party.

I wish especially to commend your representatives for the courteous treatment they have accorded our employees and their method of handling the routine business of your company, which has been without friction and with but few complaints, all such having been settled promptly and to the satisfaction of the insured.

A. W. KINZER, Local Auditor.

* * * * *

ELKHORN CONSOLIDATED COAL & COKE CO.

Hellier, Ky., June 30, 1914.

Provident Life & Casualty Co.,
Charleston, W. Va.

Gentlemen:—

Your service for the past two years, has been all that could be desired, both to the men insured and to our company, every claim having been adjusted promptly and to the dot.

Very truly,
LON RODGERS, Secy.-Treas.

* * * * *

WHAT SOME CLAIMANTS SAY ABOUT US.

Loss of Eye

Thealka, Kentucky, August 18th, 1914.

Provident Life and Casualty Co.,
Charleston, West Va.

Dear Sirs:—

It affords me pleasure to acknowledge receipt of check for One Hundred and Fifty Dollars ($150.00) in full settlement of claim for the loss of one of my eyes, which was caused by a very small piece of coal striking it while taking up bottom.

I received check within three days after final filing of claim and heartily recommend your Company for promptness and fairness in dealing with all classes of laboring men.

Very truly yours,
(Signed) JOHN M. SELVAGE.

* * * * *

KNICKERBOCKER MINES

Knickerbocker Coal
Knickerbocker Fuel Co.
Sole Agents
1 Broadway, New York

Somerset Mining Company
Knickerbocker Smokeless Coal Co.
Wilbur Coal Mining Company

Office of General Manager.
Hooversville, Pa., September 14th, 1914.

Provident Life & Casualty Co.,
Charleston, W. Va.

Gentlemen:

To whom it may concern:

It is with great pleasure that we give expression to our appreciation of the methods and worth of your company among our employees. You have been liberal and prompt in the payment of claims, and your agent, Mr. Binford, has been absolutely fair and courteous in all his dealings with us and our men. We gladly recommend both you and Mr. Binford to the consideration of any mining company that has not had experience with your insurance.

Very truly yours,
(Signed) TELFORD LEWIS, General Manager.



MINE SUPPLY SECTION

Engineering Data

Weights of Flat Iron.
Weights of Square and Round Bars of Wrought Iron.
Melting Points of Metals.
Strength of Wrought Iron Bolts.
U. S. Standard System of Bolts and Nuts.
Horse-power transmitted by Leather Belts.

The following concerns have catalogue descriptions in this section:

Childs, H. L., & Co., Inc.
Colonial Supply Co.
Duff Mfg. Co.
Ellis, Lee.
Frick & Lindsay Co.
Hoch Hame Co., Inc.
Hyde & Co., Inc.
Lawrenceville Bronze Co.
Miller Supply Co.
Ryerson, Jos. T., & Sons.
Pittsburgh Harness Supply Co.

For additional descriptions of Mine Supplies, not appearing in this section, refer to Index of Products in front of book.

WEIGHT OF FLAT IRON

Per lineal foot in pounds

For steel about 2 per cent. should be added to the weight

Width in Inches	THICKNESS IN INCHES											
	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
1	.21	.42	.63	.84	1.05	1.26	1.47	1.68	2.11	2.53	....	....
1 1/8	.24	.47	.71	.95	1.18	1.42	1.66	1.90	2.37	2.84	....	....
1 1/4	.26	.53	.79	1.05	1.32	1.58	1.84	2.11	2.63	3.16	3.68	4.21
1 3/8	.29	.58	.87	1.16	1.45	1.74	2.03	2.32	2.89	3.47	4.05	4.63
1 1/2	.32	.63	.95	1.26	1.58	1.90	2.21	2.53	3.16	3.79	4.42	5.05
1 5/8	.34	.68	1.03	1.37	1.71	2.05	2.39	2.74	3.42	4.11	4.79	5.47
1 3/4	.37	.74	1.11	1.47	1.84	2.21	2.58	2.95	3.68	4.42	5.16	5.89
2	.42	.84	1.26	1.68	2.11	2.53	2.95	3.37	4.21	5.05	5.89	6.74
2 1/4	.47	.95	1.42	1.90	2.37	2.84	3.32	3.79	4.74	5.68	6.83	7.58
2 1/2	.53	1.05	1.58	2.11	2.63	3.16	3.68	4.21	5.26	6.32	7.37	8.42
2 3/4	.58	1.16	1.74	2.32	2.89	3.47	4.05	4.63	5.79	6.95	8.10	9.26
3	.63	1.26	1.90	2.53	3.16	3.79	4.42	5.05	6.32	7.58	8.84	10.10
3 1/4	.68	1.37	2.05	2.74	3.42	4.11	4.79	5.47	6.84	8.21	9.58	10.95
3 1/2	.74	1.47	2.21	2.95	3.68	4.42	5.16	5.89	7.37	8.84	10.32	11.79
3 3/4	.79	1.58	2.37	3.16	3.95	4.74	5.53	6.32	7.89	9.47	11.05	12.63
4	.84	1.68	2.53	3.37	4.21	5.05	5.89	6.74	8.42	10.10	11.79	13.47
4 1/2	.95	1.90	2.84	3.79	4.74	5.68	6.63	7.58	9.47	11.38	13.26	15.16
5	1.05	2.11	3.16	4.21	5.26	6.32	7.37	8.42	10.53	12.63	14.74	16.84
5 1/2	1.16	2.32	3.47	4.63	5.79	6.95	8.10	9.26	11.58	13.89	16.21	18.52
6	1.26	2.53	3.79	5.05	6.32	7.58	8.84	10.10	12.63	15.16	17.68	20.21
7	1.47	2.94	4.42	5.90	7.36	8.84	10.32	11.79	14.74	17.68	20.64	23.58
8	1.68	3.36	5.05	6.74	8.42	10.10	11.78	13.48	16.84	20.20	23.58	26.94

Melting Points of Metals, in Farenheit

	Degrees.
Alloy, 3 Lead, 2 Tin, 5 Bismuth	200
Alloy, 1 Tin, 1 Lead	370-460
Aluminum	1,160
Aluminum Bronze	1,700
Antimony	950
Bismuth	510
Brass	1,870
Bronze	1,690
Copper	2,000
Gold	2,020
Iron, Cast (white)	2,075
Iron, Cast (gray)	2,264
Iron, Wrought	3,000-3,500
Lead	610
Magnesium	1,200
Mercury	39
Platinum	3,500
Steel	2,370-2,550
Silver	1,860
Tin	445
Zinc	700

Strength of Wrought Iron Bolts

Diameter of Bolt in Inches.	Safe Load in Pounds.
1/2	1000
5/8	1800
3/4	2750
7/8	3800
1	500
1 1/8	62500
1 1/4	8050
1 3/8	10000
1 1/2	11800
1 3/4	15750
2	20800

Weights of Square and Round Bars of Wrought Iron

In Pounds Per Lineal Foot.—*Kent.*

Iron weighing 480 lbs. per cubic foot. For steel add 2 per cent.

Thickness or Diameter in Inches	Weight of Square Bar One Foot Long	Weight of Round Bar One Foot Long	Thickness or Diameter in Inches	Weight of Square Bar One Foot Long	Weight of Round Bar One Foot Long
0					
1-16	.013	.010	3 1-16	31.26	24.55
1-8	.052	.041	1-8	32.55	25.57
3-16	.117	.092	3-16	33.87	26.60
1-4	.208	.164	1-4	35.21	27.65
5-16	.326	.256	5-16	36.58	28.73
3-8	.469	.368	3-8	37.97	29.82
7-16	.638	.501	7-16	39.39	30.94
1-2	.833	.654	1-2	40.83	32.07
9-16	1.055	.828	9-16	42.30	33.23
5-8	1.302	1.023	5-8	43.80	34.40
11-16	1.576	1.237	11-16	45.33	35.60
3-4	1.875	1.473	3-4	46.88	36.82
13-16	2.201	1.728	13-16	48.45	38.05
7-8	2.552	2.004	7-8	50.05	39.31
15-16	2.930	2.301	15-16	51.68	40.59
1	3.333	2.618	4	53.33	41.89
1-16	3.763	2.955	1-16	55.01	43.21
1-8	4.219	3.313	1-8	56.72	44.55
3-16	4.701	3.692	3-16	58.45	45.91
1-4	5.208	4.091	1-4	60.21	47.29
5-16	5.742	4.510	5-16	61.99	48.69
3-8	6.302	4.950	3-8	63.80	50.11
7-16	6.888	5.410	7-16	65.64	51.55
1-2	7.500	5.890	1-2	67.50	53.01
9-16	8.138	6.392	9-16	69.39	54.50
5-8	8.802	6.913	5-8	71.30	56.00
11-16	9.492	7.455	11-16	73.24	57.52
3-4	10.21	8.018	3-4	75.21	59.07
13-16	10.95	8.601	13-16	77.20	60.63
7-8	11.72	8.204	7-8	79.22	62.22
15-16	12.51	9.828	15-16	81.26	63.82
2	13.33	10.47	5	83.33	65.45
1-16	14.18	11.14	1-16	85.43	67.10
1-8	15.05	11.82	1-8	87.55	68.76
3-16	15.95	12.53	3-16	89.70	70.45
1-4	16.88	13.25	1-4	91.88	72.16
5-16	17.83	14.00	5-16	94.08	73.89
3-8	18.80	14.77	3-8	96.30	75.64
7-16	19.80	15.55	7-16	98.55	77.40
1-2	20.83	16.36	1-2	100.8	79.19
9-16	21.89	17.19	9-16	103.1	81.00
5-8	22.97	18.04	5-8	105.5	82.83
11-16	24.08	18.91	11-16	107.8	84.69
3-4	25.21	19.80	3-4	110.2	86.56
13-16	26.37	20.71	13-16	112.6	88.45
7-8	27.55	21.64	7-8	115.1	90.36
15-16	28.76	22.59	15-16	117.5	92.29
3	30.00	23.56	6	120.0	94.25

COLONIAL SUPPLY CO.

OFFICE AND SALES ROOMS

412, 414 First Avenue

Bell Phones, 1043-1044 Court. P. & A., 1870 Main.

PITTSBURGH, PA.

"Everything for the Mine"

Pipe, Boiler Tubes, Valves, Fittings, Tools, Engine and Boiler Trimmings, Packing, Belting, Transmission Goods, Heavy Hardware, Safety First Appliances, Babbitt Metal, Bar Iron and Steel, Spikes, Horse and Mule Shoes, Bolts, Nuts, Washers, Nails, Chain, Shovels, Tool Steel, Forks, Rope, Rail Benders, Mining Machine Picks and Bits, Mining Machine Cable, Brattice Cloth, Pipe Covering, Hose, Gages, Fire Extinguishers, Roofing, Waste, Brass Checks, Sand Dryers, Mine Car Hitchings, Jacks, Car Movers, Wood Rollers, Scraper Heads, Barrows, Scraper Handles, Hose Pipes, Mine Signs, Electrical Supplies, Etc., Etc.

EMERGENCY ORDERS.

We appreciate the fact that it is sometimes impossible for you to anticipate your requirements in our line. This necessitates your doing business with a company which will handle your orders quickly and intelligently. We are carrying large and assorted stocks of all kinds of supplies, we handle only the best material obtainable, we are located within a few blocks of all the main depots, express offices and packet lines and are in position to serve you satisfactorily. Send us your orders and we will forward immediately by freight, express or parcel post, as desired.

We are here to serve you at all times and realize the fact that it is frequently necessary to have material shipped at night or on Sunday. When goods must be expressed at night or Sunday, telephone

Pittsburgh 65-L Locust.
Pittsburgh 484-R Oakmont.
Pittsburgh 484-J Oakmont.
Pittsburgh 2482-J Wilkins.

and material will be put on first train leaving this city.

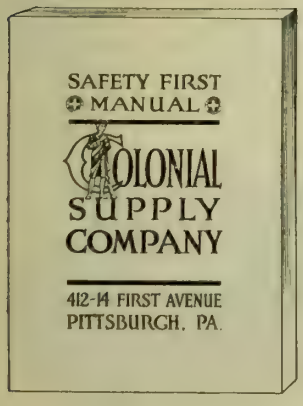
SAFETY FIRST MANUAL:

The following was taken from U. S. Government Reports:—

For one year 34,000 killed by accident, 2,000,000 injured or three every minute.

"What shall be done in the way of accident prevention?"

The promlem is solved by our new publication "Safety First Manual."

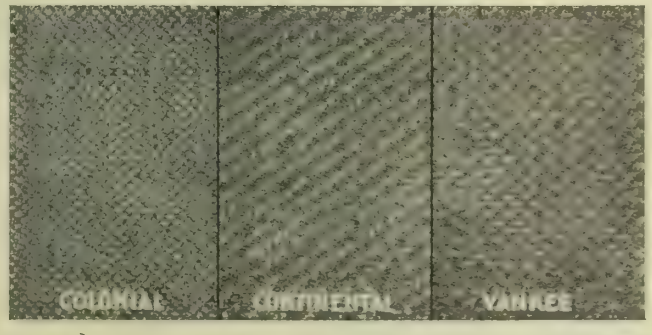


This Manual can be of incalcuable aid to that executive in whom reposes the responsibilities of planning and perfecting a successfully operated system for accident and disaster prevention.

This Manual is invaluable for Captains of First Aid Teams.

YOURS FOR THE ASKING. Write Dept. C. F.

BRATTICE CLOTH.



Our "Colonial" Non - Inflammable Jute Duck Cloth, stronger than ordinary fabrics; the tight mesh of hard twisted yarns gives greatest durability. There is no better Brattice Cloth made.

Our "Continental" Non - Inflammable Brattice Cloth is a very close woven fabric, heavy, strong and durable, and when the yarns are swelled by mine dampness, this cloth is practically impervious to air.

Our "Yankee" Non - Inflammable Brattice Cloth is the lowest priced double-warped Jute Cloth. We never had a customer register a complaint against "Yankee" Brattice Cloth.

We keep the following widths in stock at all times:

36 inch
42 inch
48 inch
60 inch
72 inch
84 inch
96 inch.

PIPING AND TUBING:

PIPING AND TUBING:

We are one of the largest distributors of Wrought and Iron Steel Pipe, Wrough Iron and Steel Tubing, Wrought Iron and Steel Line Pipe, Lap Welded Steel Boiler Tubes, Lap Welded Charcoal Boiler Tubes, Seamless Steel Boiler Tubes, Pure Copper Boiler Tube Ferrules (all sizes). Also mild open hearth, lap welded, "Perfect" Seamless Cold or Hot Drawn Steel Tubes. Any size or length of standard sizes or gauges. Special gauges or special bent tubes are furnished promptly.

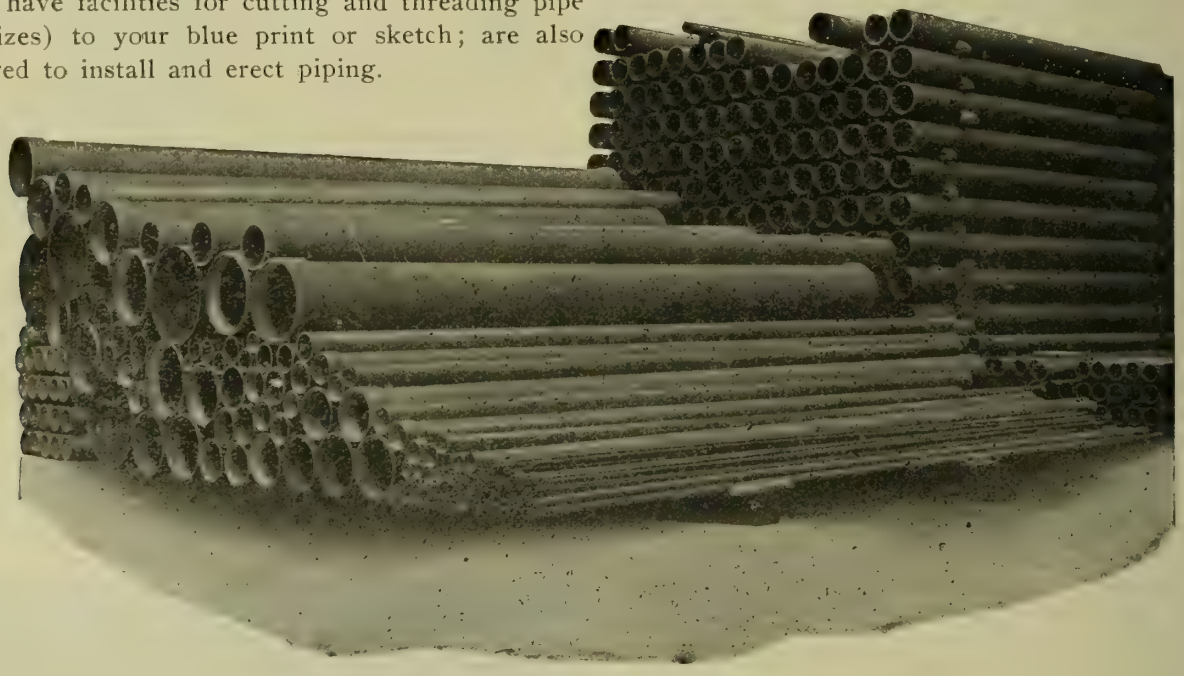
CUTTING PIPE TO ORDER:

We have facilities for cutting and threading pipe (all sizes) to your blue print or sketch; are also prepared to install and erect piping.

ALWAYS READY
COLONIAL SERVICE:

WE SHIP FROM OUR OWN STOCK AT MILL DISCOUNTS.

There's all to gain and nothing to lose by sending us your orders. If you're not already acquainted with our service, get in touch with us, and let us prove to you that we can give you quicker delivery on better quality piping and tubes, than your money will buy anywhere.





Naiad Brand of Belting. It Lives In Water.

LEATHER BELTING.

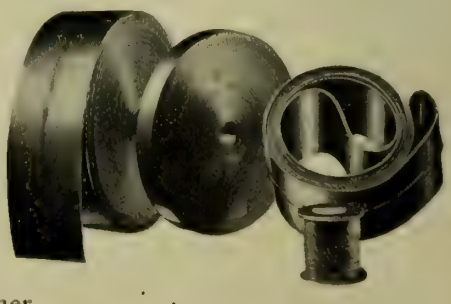
We handle a complete line of Detroit Oak Belting Company's Belting, under their brands, "Wolverine Planer," "Naiad," "Best Grade," "Detroit Velocity" and "Backbone." There are none superior to these products in spite of the severe competition met in the shape of cut prices and misrepresented goods.

We operate one of the largest and most up-to-date plants in the country, devoting our superior facilities entirely to the manufacture of leather belting.

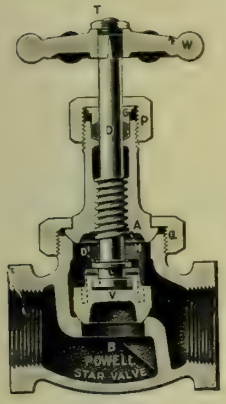
We solicit your patronage when you are in the market for strictly high grade goods.

WARRANTY:

We warrant our "Wolverine Planer," "Naiad," "Best Grade" and "Detroit Velocity" Leather Belting to be as good as the best leather and expert workmanship can make it, and if, with fair and reasonable usage, any part of this belting shall fail by reason of defective leather, or poor workmanship, we agree, if notified promptly on such defects, to replace or repair same without charge to the customer.



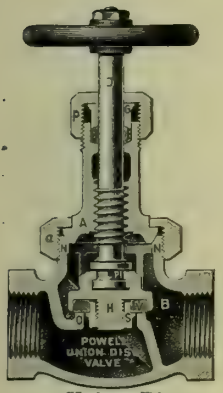
VALVES.



Model Star

Powell "Model Star" Valves.

For every Mining Demand, made in sizes ¼" to 4" inclusive. screwed or flanged ends, medium and extra heavy patterns. Globe Angle, Cross and Check Valves. These valves are carried in stock.



Union Disc

Powell "Union" Composite.

Disc Valve is made along the same lines of our "Model" Star Valve. It has the "Union" Bonnet Connection, Swivel Disc Holder which will retain any make of Rubber Discs and will stand most severe test under any condition. These valves are carried in stock.

PACKING.

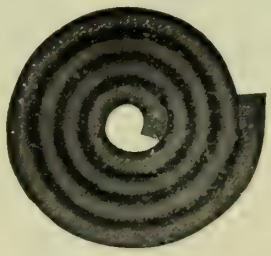
N. B. O. the original Black Sheet Packing.



The peer of all Rubber Sheet packing for withstanding the action of oil, acid, Alkali, Ammonia and steam, made plain or with wire cloth or asbestos insertion; also made in ring or gasket (Flat or Tubular) or moulded to design. **Weighs less per square yard than all other packing.**

Colonial Diagonal Packing:

A real packing for steam piston, ammonia and hot water pumps. Colonial Packing is made either in coil, spiral or ring form. Made for low and high pressures.



Regular — recommended for pressures to 100 pounds.

Special — recommended for pressures over 100 pounds.

All Colonial Packings put up in air-tight tin boxes. This thoroughly protects packing from atmospheric action, grit and other foreign matters.

TRY COLONIAL RED SHEET (Guaranteed.)

We carry a full line comprising all styles of packing. When in the market for packing of any description, get in touch with our Packing Department. We will save you money.

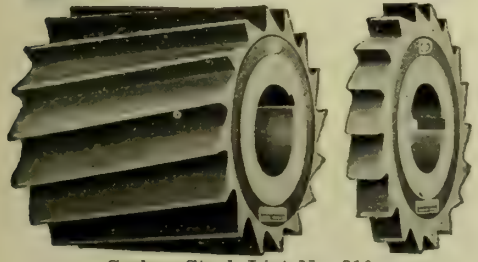


Trade Mark

"Detroit" Tools are backed by the maker's rigid guarantee and we authorize you to return any which do not prove satisfactory.



Trade Mark



Carbon Steel, List No. 310.
High Speed Steel, List No. 310-A.

"DETROIT" TWIST DRILLS

The very best steel, correct design, intelligent workmanship, exact heat treatment, an intimate knowledge of temperature requirements, 28 years' experience and the most modern equipment—all these supplemented by an exacting system of supervision insure Strength, Accuracy, Durability and a high Cutting Efficiency.

"DETROIT" TWIST DRILLS



are ground on their centers *after hardening.* They are accurate to the 1/2000 of an inch, the lip angles are equal and the grooves milled with the greatest precision.

"Detroit" Drills and Reamers are specified exclusively by many of the largest and the best manufacturers of automobiles in the country as well as by the largest Railroads and Mining Plants. Actual use proves that they cut the most metal with the least regrinding. Their use increases the working capacity of both men and machines.

"Detroit" Twist Drills and Reamers are made in all sizes and styles for every conceivable service—carbon and high speed steel. We carry a complete line and fill rush orders on short notice. Get some on trial.

"A Hole at Half the Cost."

H. L. CHILDS & CO.

INC.

PITTSBURGH, PA.

Bell Phones 122-123 Court Established 1877

Mill and Mine Supplies

Products

Mill and Mine Supplies.

Non-inflammable Brattice Cloth, Cotton Rubber Lined and Underwriters' Linen Fire Hose; Rubber, Canvas and Leather Belting; Air, Steam and Water Hose; Hydraulic and Steam Packings; Cotton and Wool Waste; Alligator Steel Lacing; Puncher Picks and Machine Bits; Fire Extinguishers; Boiler Graphite, etc.

Brattice Cloth

We are large importers of Brattice Cloth.

All our Brattice Cloth is fireproofed by a chemical process, is absolutely non-inflammable, and will not rot as quickly as other cloths, or unravel.

"M. U. N." brand, is a very close-woven Jute non-inflammable Brattice Cloth, which allows only a very small amount of air to pass through it.

"E. G. C." brand, is a heavy Jute non-inflammable Brattice Cloth, made from a very strong double warp and durable thread, a cheaper cloth, but of high quality.

"H. L. C." brand, is a high grade non-inflammable Twilled Brattice Cloth.

Large stock of all widths and grades carried.

Samples and prices sent upon request.

Hose

Water, Steam, Air Drill and Suction Hose.

We carry a complete stock of the different sizes and grades of Hose. Write us for samples and prices.

Fire Hose

Cotton Rubber Lined and Underwriters' Linen Hose.

Our Fire Hose is absolutely guaranteed to stand required pressures, and our Underwriters' Linen Hose bears the Underwriters' Laboratories Labels.

Leather Belting

"BESSEMER" brand, oak tanned.

Double and single ply Leather Belt, made with short lap and from heavy center stock.

Rubber Belting

"BESSEMER" brand, weight 32 oz. Duck.

This Belt has a high friction, is extremely flexible, and is adapted for either driving or conveying purposes.

Canvas Belting

"GANDY" Belting.

We are the sole agents in this territory for the famous "Gandy" Canvas Stitched Belt, made from 33 oz. Duck. We have been handling this belt for 30 years. The "Gandy" Belt has an "Imbedded Stitch," which holds the plies of the belting solidly together and making the surface of the belt smooth. This belt is also saturated in a compound of purest oils, making it water, steam and heat-proof.

All sizes and weights carried in stock.

Waste

We carry a large stock of all grades of white and colored Cotton Waste and Wool Waste.

Can give you any grade, from a cheap colored Waste for rough work for a few cents a pound, to a high grade fancy white polishing Waste for automobile owners and engine rooms.

All our Waste has long fibre and is absolutely clean and free from foreign substances of any kind.

Boiler Graphite—85% Pure.

Our Boiler Graphite is a most perfect material to mechanically and gently loosen and remove scale in boilers. Because of its mechanical action, it works equally well in any kind of feed water. It is the highest grade of natural amorphous Graphite that can be produced and has absolutely no effect upon the metal of the boiler, as many of the commonly called Boiler Compounds have. Our Boiler Graphite is not soluble in water and, therefore, will not carry out with the steam, as do most chemically acting boiler compounds. We carry this in 100 lb. kegs and 400 lb. barrels.

"Alligator" Steel Lacing

For machinery belting.

This is a modern Lace for leather, rubber, balata and cotton or canvas stitched belting. A separable lacing, hinging on a rawhide or sectional steel rocker pin.

To attach this Lacing to a belt no tool is required but a hammer.

It will work perfectly with an idler.

No punched holes, which weaken a belt, are required.

"Alligator" Lacing is suited to exceptional requirements as well as the ordinary run of factory work; in many cases making a satisfactory joint where all other kinds of fastenings have failed to meet conditions. We carry a large stock of all sizes.

Let us send you a sample box free of charge.

Mining Machine Bits and Puncher Picks

We manufacture our own Machine Bits from the finest high carbon steel, any length, size or shape you may require, with either chisel or pick points.

We have a large stock of Puncher Picks, which are made to fit any machine. They are tempered and drawn, which makes them very tough.

A trial order will prove our statement.

Packings

We carry a large stock of all kinds of Rubber, Hydraulic and High Pressure Packings.

"Childs" Fire Extinguisher

Capacity 3 gallons.

Our Hand Chemical Fire Extinguisher is made under the supervision of the Underwriters' Laboratories, Inc. This extinguisher is brass and of exceptionally fine finish, and contains a chemical that has proven to be forty times as efficient as water and will extinguish fires of oil, naphtha, gasolene, etc.

FRICK AND LINDSAY COMPANY

PITTSBURGH, PA.

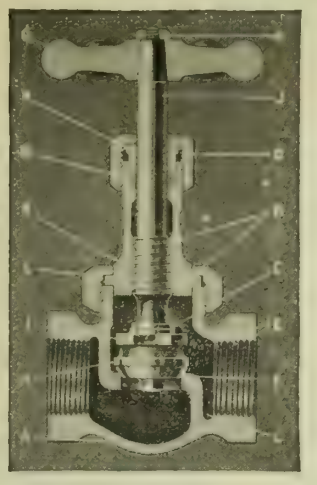
Mine Supplies and Specialties.



"Superior" Brand ends shovel troubles.



Two excellent brands made to our order, "Standard and "Superior." Smallest test orders welcomed.



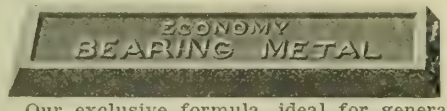
Williams heavy Navy-bronze, re-grinding valves—the perfect mine valve.



Schiller Seatless Blow-off valves. Most perfect modern valve. Guaranteed to end blow-off troubles.



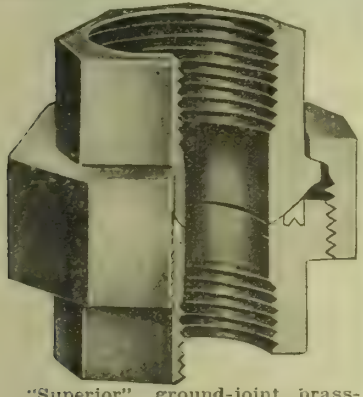
"F. & L." Brass Mine Car Oilers. Powerful and indestructible.



Our exclusive formula, ideal for general coal mine service. Equal to metals 50% higher.



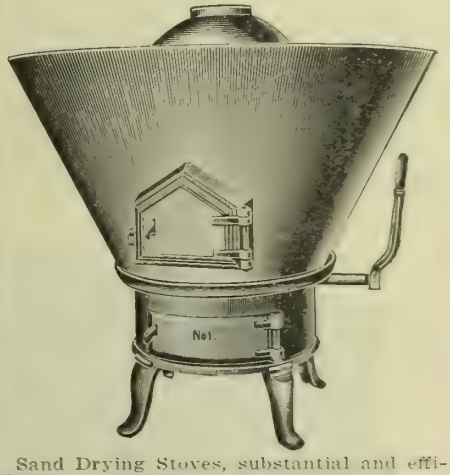
Best made, regardless of name or price. Entirely different from countless brands on market. Will last a generation. Requires no paint for at least six years.



"Superior" ground-joint brass-seat union. No gaskets required. Ideal for hard service.



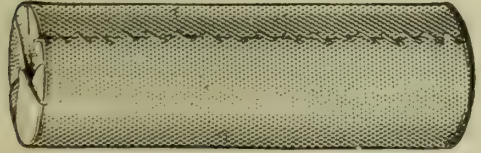
Roebling Wire Rope. Partial view of F. & L. Co.'s large modern wire rope warehouse rooms. Electric crane and reeling apparatus insure prompt execution of large or rush orders.



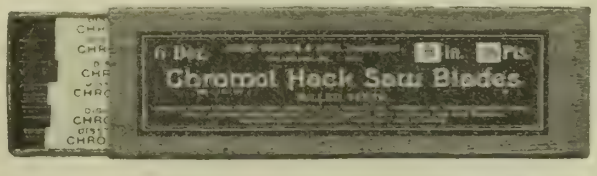
Sand Drying Stoves, substantial and efficient.



Water, steam, air-machine and coke hose. All styles and grades.



Full stock of Duck and Jute Brattice—all widths and grades.





Disston's "Chromol" hack saws. Quick-cutting and durable. Like Disston's files, the best made.



Short & Mason's Anemometers—U. S. standard.

THE MILLER SUPPLY COMPANY

Huntington, West Virginia

Jobbers and Dealers in

Supplies and Machinery

For

Mines, Mills, Machine Shops, Furnaces, Quarries, Factories, Railroads and Contractors

Established 1897

Products

A very large and well-assorted stock of Iron Pipe, Valves and Fittings, Stretchers, Blankets, Rail Brakes, Blasting Supplies and Explosives, Pumps, Gaskets, Packing, Steam Specialties, Pulleys, Sheaves, Wire Rope and Cable, Concrete Mixers, Building Material, Drills, Compressors, Fans, Hoists, Mine Cars and Wheels, Miners' Lamps of all classes, First Aid Appliances, Roofing, Siding, Structural Material, Boilers, Engines, Tanks, Hardware and Tools, Machine Tools, Hose, Belting, Elevating and Conveying Machinery.

Largest distributors of Portland Cement in Ohio Valley.

Our Catalogue No. 2

Is the most complete and comprehensive catalogue ever gotten up by a mine supply house. It is a veritable encyclopedia of information on mining machinery, equipment and supplies. It contains nearly a thousand pages, and over eight thousand illustrations, and a vast amount of useful information and specification data. It is indispensable to the busy up-to-date mining man. Write us for the "Red Book." It will be sent to you upon request.

Economy and Safety "Friction" Rail Brake

Manufactured exclusively by us.

A device for dropping R. R. cars under coal chutes over railroad or mine scales, and a dozen other uses in which it can be successfully adapted. The brake was designed especially for use in wet, snowy and sleety weather, but of course will work successfully under any conceivable weather conditions.

We quarantee that one man with a Friction Rail Brake can handle more cars and with greater safety than three men can in the ordinary way. The car is always under absolute control of the operator and can be moved any distance desired. Several cars can be handled as easily as one and with equal safety.



It does away with the somewhat antiquated and unreliable method of "scotching" cars during process of loading. It cuts off the "scotcher," the man at the brake and a third man with the pinch-bar. Why employ three men when one, with a Friction Rail Brake can do the work as well and with absolute safety?

There are two styles—the Friction Rail Brake and the improved Friction Rail Brake. The former, which is illustrated above, is operated by means of a third rail under chutes and extending a short distance on each side of same. It will fit any sized rail. Any ordinary rail will do. No fish plates used. The Improved Friction Rail Brake does not require a third rail, but is operated by utilizing the track rail in connection with patented fish plates which are furnished with this brake.

The base of the lever is in the form of an eccentric from which the clutching power of the shoe upon the rail is obtained. It is also fitted with the ratched arrangement that works automatically when clutch is applied, rendering any sudden or accidental releasing of brake impossible.

The action of the clutch upon the rail is so positive that it will stop a loaded car, in motion, dead still at will of the loader or party handling the brake, and will break a three-quarter inch tested chain before slipping, if load is heavy enough.

The Friction Rail Brake is an entirely new patented device for controlling railroad cars in process of loading during bad weather. It has been on the market only a short time, but from a large number of testimonials from coal mine operators, it has proven an unqualified success.

Upon application we will ship the brake complete, including chain and hooks, to any point in the United States on ten days' trial.

Price, Friction Rail Brake, each $50.00.

Price, Improved Friction Rail Brake, each, $65.00.



JOSEPH T. RYERSON & SON

CLYDE M. CARR, President. JOSEPH T. RYERSON, Vice-Pres.
Established 1842 Incorporated 1888

CHICAGO NEW YORK ST. LOUIS

CHICAGO
RAILWAY
EXCHANGE
And 16th and
Rockwell Sts.

NEW YORK,
30 Church St.
ST. LOUIS,
Hagar Plant,
2208 N. 2nd St.

JERSEY CITY
MINNEAPOLIS
SEATTLE
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KANSAS CITY
CLEVELAND
DETROIT

IRON STEEL MACHINERY

Concentrate your purchases and secure immediate shipments from the Ryerson Warhouses. Save time, freight, hauling, checking and office work.

A PARTIAL LIST OF PRODUCTS—LARGE STOCKS ALWAYS ON HAND.

Angles
Anvil Tools
Anvils
Babbitt Metal
Bands, Hose
Bars, all kinds
Beams
Bellows
Belting
Benders, Rail
Bends, Pipe
Billets, Forging
Blowers
Boiler, Flanges,
  Hangers and Lugs
  Nozzles
  Tubes
Bolt Ends
Bolts, all kinds
Brushes
Burrs, Riveting
Bushings
Calipers
Cans, Oily Waste
Cap Screws
Caps
Car Movers
Chain
Channels
Chisels
Chucks
Claw Bars
Cleaners, Flue

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144 Page Stock List

Showing pictures of products standard sizes, guages, weights, prices and other useful information.

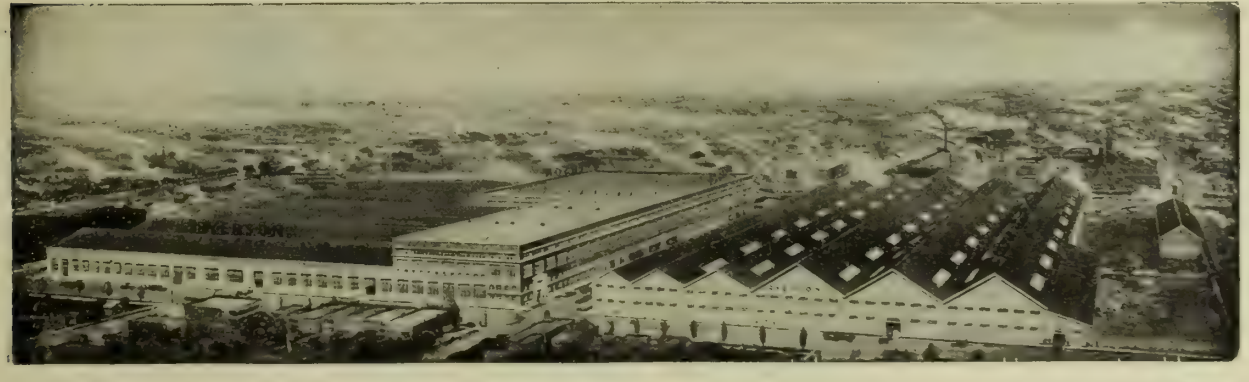


Clippers, Bolt
Clips, Wire Rope
Cloth, Wire
Coach and Lag Screws
Cocks
Coke Forks
Collars, Shafting
Compounds
Compressors, Air
Coppers, Soldering
Counter-Shafts
Countersinks
Couplings
Covering, Pipe
Crow Bars
Crucibles
Cutters
  Lace
  Pipe
  Tube
  Washer
Cutting Off Tools
Dies
Discs, Durable
Dividers
Drawing Steel, Cold Rolled
Drills
Drivers, Screw
Ejectors
Engines
Exhausters
Expanded Metal and Lath
Files and Rasps
Fire Box Steel, Hartford
Fittings, all kinds
Flanges, Forged Steel Boiler
Floor Plates, Steel
Flue Plugs
Flues
Forges
Furnaces, Morison Corrug
Fusible Plugs
Galvanized Angles
  Ingot Iron Sheets
  Sheets
Glue, all kinds
Glyco Metal
Governors
Graphite
Grease Cups, Brass
Grinders
Hangers and Lugs
Headers, Pipe
Handles
Hammers
Hand Holes
Heads, Boiler

Hoists, Chain
Holders, Tool
Hooks
Hose
I Beams
I Beam Trolleys
Ingot Iron, Annealed Sheets
Injectors
Iron, Bevel Edge
Iron Bars, Rounds, Squares,
Jack Screws
Jacket Iron
Jacks
Joint Cement
Joints
Keys, Flat Spring
Knives
Lag Screws
Lamps
Lead
Leathers, Pump
Link Belt
Links
Locknuts
Lubricators
Lugs and Hangers, Boiler
Malleable Iron Fittings
Malleable Unions
Manholes and Covers
Manilla Rope
Mason Safety Treads
Mauls, Spike
Metal Lath
Nails
Nozzles, Boiler
Nuts
Packing
Pails, Galvanized
Paint
Paper
Plates
Pulley Blocks
Pulleys
Pumps
Punches, all kinds
Ratchets
Reamers
Reducers, Brass
Reels, Hose
Reinforcing Rods
Riddles
Rivets
Rods
Roofing and Siding
  Galvanized
  Black, Corrugated
  Painted, V Crimped

Saw Blades, Stone
Saws, Friction
  Hack
Screen, Perforated
Scrapers
Scraping Tools
Screw Plates for Bolts
Shafting, Cold Rolled
Shapes
Sheet Brass
Sheets, all kinds
Shoes, Horse and Mule
Shovel Handles
Shovels
Sledge Hammers
Sleeves, Taper Shank
Sockets, Drill
Solder
Spades
Spikes
Split Pulleys
Sprocket Wheels
Stair Treads
Steel and Iron
Stocks, Pipe
Strip Steel
Stud Bolts
Swedish Iron
Tank and Sheet Iron Rivets
Taps, Bolt
  Machinist's Hand
Machine Nut
Tarpaulins
Tee Rail
Tents
Thermometers
Tire Steel
Tongs
Tool Steel
Tongs, Blacksmith's
Treads, Mason Safety, Stair
Turnbuckles
Twist Drills
Ulster Iron
Unions, Malleable
  Cast Iron
Universal Rolled Plates
Valves
V Crimped Roofing
Vanadium Steel
Vises, all kinds
Washers
  Star
Whistles
Wire, all kinds
Wrenches

RYERSON STEEL—SERVICE TO THE MINE.



HYDE AND COMPANY, Inc.

Charles Hyde, Pres.

316 Fourth Avenue, Pittsburgh, Penna.

Products

Rails, new and relaying.
Bridges, new and reconstructed.
Sand Dryers, for use wherever dry sand is required.
Boilers, new and rebuilt.
Locomotives, standard and narrow gauge.
Steam Shovels, completely overhauled.
Hoisting Machinery, guaranteed.
Frogs, Switches, Switch Stands, Cross-Overs, and Special Layouts.

"Hyde" Sand Dryers

are used exclusively by a great many railroads, coal operators, lumber roads, contractors, etc.



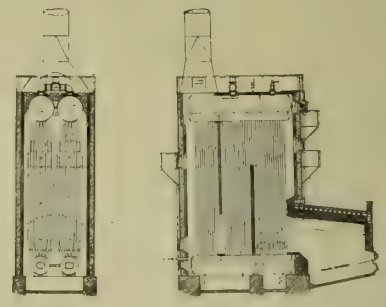
Prices and full descriptive literature upon request.

We are sales agents for:

"Whitney Punch,"
"Easy Car Pusher,"
Station Seats, Car Seats, Etc.,
"Lead Lined Pipe,"
"Tin Lined Pipe,"
"Tuftex Woven Belting,"
"Innerduck Belting,"
Oil, Steam and Gas Engines.

We frequently have great bargains in such **mine** and **mill machinery** as—**air compressors** and **generating** sets (both turbine and engine driven) as high as **1000 and 1500 K. W.** to the set and are in close touch with the manufacturers of all kinds and varieties of mill, mine and railroad supplies. If you don't find what you want listed above we respectfully invite your inquiries and if we have not got it we can get it for you.

Selling Agents for
Morrison Water Tube Boilers

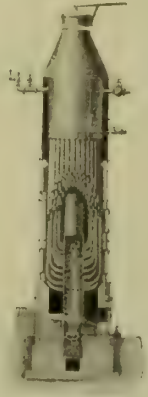


End View. Side View.
From 200 H. P. to 1000 H. P. Units.

1. No large alleyways requiring baffling.
2. Baffle walls nine inches thick **not** laid on, tied to, or supported in any way by the tubes.
3. **Impossible** for gases to short circuit to the stack.
4. **No** special bricks required.
5. **Any** tube removable without disturbing other **tubes or baffles.**
6. **Unimpeded circulation combined** with vertical tubes.
7. **Minimum** opportunity for the **lodging** of fuel dust and scale.
8. Tubes distributed **uniformly** throughout heating chamber.
9. **Few** openings in boiler walls.
10. A solid baffling system which means **lasting efficiency.**

"Hyde" Water Tube Safety Boiler

The "Hyde Water Tube Boiler" is built for direct firing as well as for the utilization of the waste



125 H. P. to 350 H. P. Units.

gases from all kinds and types of puddling and heating furnaces without affecting the efficiency of the furnace.

"Anything from a Spike to a Locomotive."

LAWRENCEVILLE BRONZE CO.

Established 1891

Thirty-first Street and Penn Avenue

Pittsburgh, Pa.

Manufacturers of

Brass, Bronze and Copper Castings
Anti Acid Metal Castings for All Purposes

Products

Brass and Bronze Repair Parts for Mining Machines, such as Gears, Bushings, Washers, etc.

Armature and Mine Locomotive Bearings.

Anti Acid Metal for pump rods, liners, valves, etc., for mine pumps.

Railroad Engine Brasses and Car Journal Bearings.

Rolling Mill and Machinery Brasses of all kinds.

Babbitt Metals—packed in 50 pound boxes.

Quick Coupling O. K. Unions—all sizes and for every purpose.

Larry Brasses for Coke Works.

Mine Car Bearings.

Anti Acid Metal for All Purposes

We make Pump Liners, Rods, Valves, in fact all metal parts exposed to acidulous water, from our own special formulas, which have given excellent and satisfactory service at a number of mines and steel mills where their water conditions are very bad. Our Acid Metal has the quality of being strong and tough in addition to its acid resisting properties.

Malleable Bronze Gears

Our cast gears are superior to all others for Mining Machines where coal dust is a factor in the wear and tear. These gears are cast so as to require no machine work on the teeth and the result is that the hard cast surface has greater resisting qualities against the action of grit, etc., than the finely finished surface of a cut gear.

These gears on your coal cutting machines mean service and economy.

Heavy Brass and Bronze Cocks

We manufacture heavy Brass and Bronze Cocks, 2, 3, and 4 way, for very severe conditions for use around coke ovens, and other places demanding this type of goods. These Cocks are made from our own special design, having a closed bottom, and have met with great success wherever used. We do not make these Cocks up for stock but each order is machined to suit your particular wants, so that the parts are interchangeable with whatever type you are now using.

Bronze Unions for All Purposes

We manufacture Unions of all kinds to meet various conditions. Our "O. K." Union is manufactured exclusively by us; is of the quarter turn type, specially adapted for use where quick connections are required.

Satisfaction Guaranteed

Our long experience has put us in a position to be able to make you castings from material suitable for the purpose intended. If you will but acquaint us with the conditions under which the castings are being used we will furnish you with castings that we will guarantee to give entire satisfaction.

Write, phone or wire us your inquiries and we will call on you and quote reasonable prices, and furnish the goods for which you have been looking.

THE DUFF MANUFACTURING CO.

MAIN OFFICE AND WORKS—PITTSBURGH, PA.

New York—50 Church Street. St. Paul—Merchants Bank Building

Atlanta—Candler Building. Chicago—Peoples Gas Building.

San Francisco—Monadnock Building.

Largest Jack Manufacturers in the World

Exclusive Manufacturers of

Genuine Barrett Jacks, Barrett Mine Jacks, Ball Bearing Screw Jacks, Duff-Bethlehem Hydraulic Jacks and Screw and Timber Braces

---

Dufco Mine Jacks.



No. 223

Nos. 226 and 223 are especially popular for adjusting coal cutters. There are only three simple operating parts—the machine-cut steel rack, socket lever and retaining pawl. Jack may be lowered notch by notch when under load, or may be dropped instantly when free. There are no parts to rust out or to get clogged with fine rock, grit or dirt.

No.	Capacity Tons.	Height Inches.	Raise Inches.	Weight Lbs.	List Price.
226	2½	18½	10¼	31	$18.00
223	4	22	13	44	25.00

Barrett Automatic Lowering Jacks.

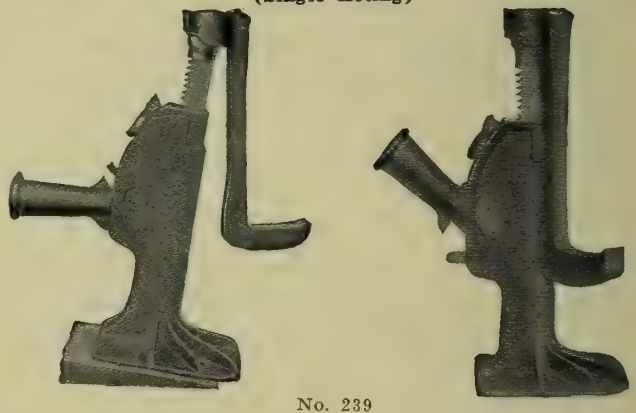


No. 2

For all around lifting purposes. These Jacks are double acting—raising the load on both upward and downward stroke of lever. They lower the load gradually. For simplicity, strength and quick, easy operation they have no equal.

No.	Capacity Tons.	Height Inches.	Raise Inches.	Weight Lbs.	List Price.
50	5	16	8	35	$16.00
51	5	21	13	42	18.00
2	10	21	10	73	25.00
3	12	26½	15	95	30.00
4	15	22	10	106	35.00
5	15	28	15	124	40.00

Barrett Emergency Car Jack.
(Single Acting)

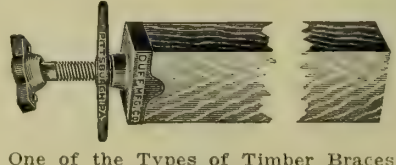


No. 239

The most powerful ratchet Jack made. Can be used in very small places. Forged steel claw swivels horizontally and vertically. Used as car and engine replacer.

No.	Capacity Tons.	Height Inches.	Raise Inches.	Weight Lbs.	List Price.
239	15	22	10½	97	$55.00

Timber Braces.



One of the Types of Timber Braces Used in Mine Shaft Work. Can Be Used Any Length from 2 to 30 Feet.

We do not furnish timbers.

Size of Screw.	Size of Cap or Washer Plate.	Weight Per Doz.	List Price Per Doz. Sets.	Type. Code.	Butt End Caps Per Doz.
1½x14″	4x 4″	175 lbs.	$18.00	Tack	$ 3.00
1½x14″	6x 6″	192 lbs.	20.00	Tag	4.00
1½x18″	6x 6″	214 lbs.	22.00	Tank	4.00
2 x18″	6x 6″	384 lbs.	38.00	Tar	5.00
2 x18″	6x 8″	410 lbs.	40.00	Teak	7.00
2 x18″	10x10″	450 lbs.	42.00	Tenor	10.00
2 x18″	9x12″	444 lbs.	44.00	Tern	11.00

Send for Large Catalogue Illustrating Standard and Special Jacks.

THE HOCH HAME CO., INC.

Manufacturers of

The Original Hoch Patent Hame

General Office HAZLETON, PA. Works, FREELAND, PA

PRODUCTS

We manufacture the original Patented Hoch Hames for mines, lumber camps and farm.

HOW ABOUT YOUR MULES, Mr. Manager?

Are you making the work as easy for them as it is possible to make it? At the prices you are now compelled to pay for these animals it certainly behooves you to look after their comfort so you may be able to obtain the most efficient service possible. Knowing full well if they are working free and easy more can be accomplished and thus reduce the cost of production.

The Hoch Patent Mine and **Team Hames** insure all this, being high draft, perfectly balanced and **fitting** the collars **JUST RIGHT,** thus preventing sore shoulders.

They are made of the best quality fine grained oak and ash obtainable bent with the grain which adds to their strength prevents them from becoming warped or bent and saves your collars from being ruined.

Have you counted the cost at your collieries from this common occurence, your hames break and you are delayed for five to ten minutes at your slope? **Our Patent Draft Attachment** and quick repair features prevent all these losses. Send for catalog or better still send us a trial order and in that way learn more about the time and money savers.

No. 1 and 448

Low Top



This low top Mine Hame shows the Hoch Lever partly opened, made of the Heavy Hoch Mine Pattern, Natural Root Wood, and Hoch's Patent Draft Attachment with Steel Trace Hooks, varnished, showing perfect grain of wood; made High or Low Tops; Sizes 13 inches to 24 inches.

No G648 Low Top



This Hame shows the Smith Lever partly opened, the extra Chain Hook Plate on the right hame, made of the Heavy Mine Pattern, Natural Root Wood, and Hoch's Patent Draft Attachment Steel Hooks Varnished. Made High or Low Top. Sizes 13 inches to 24 inches.

No. 12487 High Top



This Team Hame shows the Hoch Lever partly opened, made of the Natural Root Wood, with Hoch's Patent Draft Attachment with Steel Trace Hooks and Double Grooved at the top for hame strap, Bottom painted Black and the top a beautiful Vermilion or Varnished, for heavy lumber work. Sizes 17 inches to 25 inches.

Catalog upon Request.

LEE ELLIS

Sullivan, Ind.

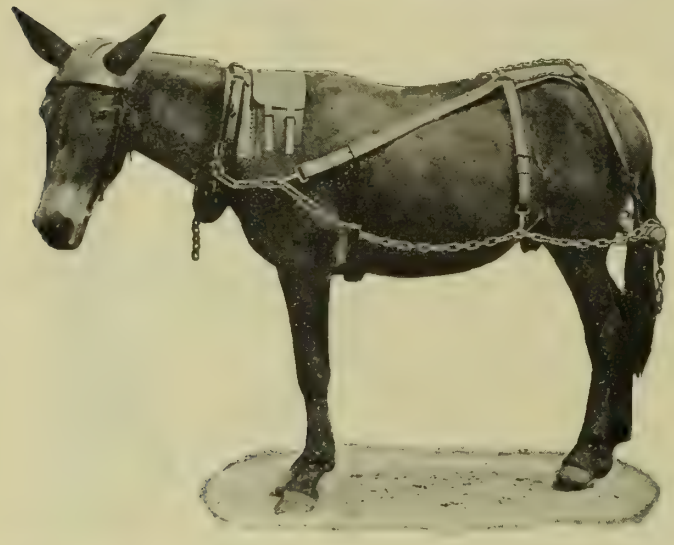
Successor to

STRATTON HARNESS CO.

Mine Harness

Products

We manufacture a complete line of Harness and Accessories used in a mine, such as Mine Harness, Spiders, Collars, Wither Pads, Skull Caps, Hames, Collar Pads, Open Bridles, Trace Chains, Belly Bands, Heavy Hame Straps, etc.



Spider or Body Part Mine Harness No. 1—Pat. Jan. 23, 06.

Our No. 1 Spider or Body Part (the best spider made) is something out of the ordinary in construction. It is made of first class material. The butt stick or single tree strap and the back straps are 2 in. wide; the straps that hold the chains at the side are 1½ in. wide. These straps are all made adjustable so they will fit large or small mules. The pad that rests on the hips is large and heavy and on top the rings at the corners are connected by a very strong flat chain, as shown in cut on this page. This chain makes the harness very strong and durable and takes the rub whenever the mule strikes the roof of the mine. It also protects the mule from injury, as well as making the harness last must longer. We furnish this spider to some of the largest mines in Indiana, Illinois, Ohio, Pennsylvania, West Virginia, Kentucky, Tennessee, Alabama and Missouri, and they have given perfect satisfaction. A Trial Order will convince you that they are the best and most economical Spider to use. **Price $4.85.**



Wither Pad

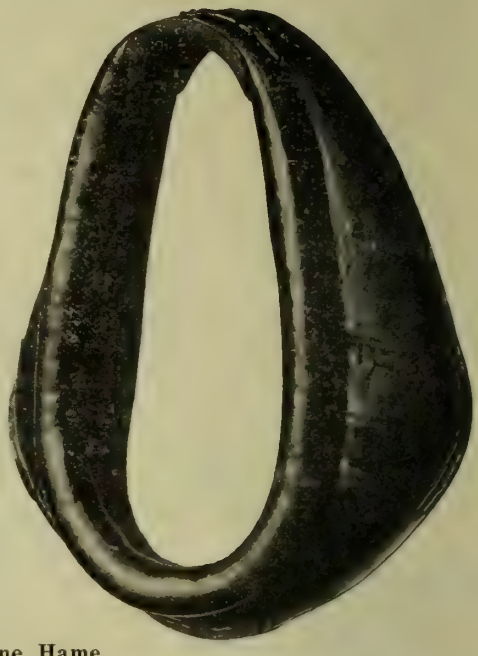
This is one of the best protections for the mule's withers. It is made of heavy leather and buckles around the top hame strap, has two small flat chains on top to take the rub when striking the roof. A good thing for low vein coal.

Price $1.25 Each.

Mine Collars

Scotch pattern, black kip leather back, solid leather rim, fair faced, throng sewed throughout, pressed pad, flat top with buckle. 16½ in. draft. Our 34 Collar is a regular Mule Collar and made for mine work.

We make several sizes of collars to suit conditions. Let us have your orders for them.



Pennsylvania Mine Hame

Is the best Hame manufactured. Comes in sizes from 14 to 20 inches, with heavy lattern hook 1 x 1¼, steel backs, extra heavy forge steel hooks, heavy chain attachment at top and bottom, finish black. We also carry different types and makes.

Skull Cap

This Skull Cap is a good protection for the top of the mule's head. They are made of heavy leather and moulded to fit the top of the head; has ear holes and is fastened on with throat strap. They are a fine thing for a mule which strikes his head. Can be used with or without bridle or halter.

Price $9.00 Per Dozen.



Heavy Open Bridles

One in. checks (no reins), for mine use.

Price $11.00 Per Dozen.

Heavy Belly Bands

Extra heavy, 1¾ inches wide, for mine mules.

Price $7.00 Per Dozen.

Heavy Hame Straps

Extra Heavy Hame Straps, 1¼ inches wide, for mine hames. **Price $3.00 Per Dozen.**

Trace Chains

Extra heavy No. 0 chains, the heaviest trace chain made. Just the thing for mine use. **Price $9.00 Per Dozen Pair.**

Mail Orders

Mail orders entrusted to us will receive careful attention, and if for regular goods will be filled immediately. You can depend upon the quality and finish of our goods and can rely on their being exactly as represented. We want your business and are equipped to handle it promptly. Reference furnished.

FULL CATALOG FURNISHED UPON APPLICATION.

PITTSBURGH HARNESS SUPPLY CO.

PITTSBURGH, PA

Reduce Your Mine Harness Expense One-half



We want you to try the new (TOWARD) PATENT MINE SPIDER AND SAVE ONE-HALF ON YOUR MINE HARNESS. The rump piece is made of two ply leather of proper dimensions to prevent spider from slipping off rump of mule or horse. All conections are made of No. 9 twisted link chain with snap in end for adjustment and guaranteed not to rust nor rub the mule.

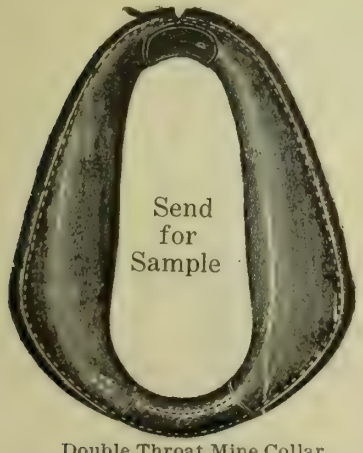
This spider will last longer than the old fashioned leather spider and reduce your expense for mine harness 50%. We want you to order a sample spider, use it thirty days, and if not perfectly satisfactory, return it to us, and we will credit your acount or refund your money. The spider must speak for itself and it costs you nothing if not satisfactory.

No. 1915CF Mine Spider, Price $3.00.



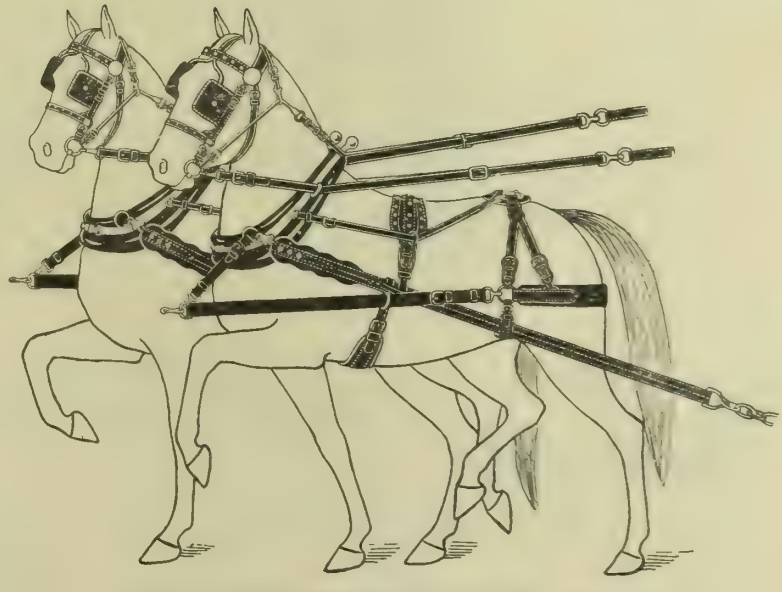
We save you money on all your harness and horse goods equipment. Get prices.

WE MANUFACTURE HARNESS FOR EVERY PURPOSE SEND FOR QUOTATIONS.



Double Throat Mine Collar.

Our mine harness are used in all parts of the world.



OUR No. 1908 TEAM HARNESS—Made for Heavy Work.



MINERS' TOOLS & SUPPLY SECTION

The following manufacturers have catalogue descriptions in this section:

Allison Coupon Co.
Chicago Sales Book Co.
Fulton Tool Works.
Hardsocg, Martin, Co.
Leetonia Tool Co.
Nixon Mining Drill Co.
Progress Cap Factory.
Southern Coupon Co.

For additional descriptions of Miners' Tools and Supplies, not appearing in this section, refer to Index of Products in front of book.

THE FULTON TOOL WORKS

CANAL FULTON, OHIO

Manufacturers

Coal and Rock Drills, Breast Augers, Copper Tools, Etc.

THE (FULTON) LINE

Products

We manufacture a complete line of miners' tools and supplies, such as: coal picks, sledges, wedges, striking hammers, mining machine bits, copper tamp drills, copper tamper and scraper, copper needles, slate bars, crow bars, spike bars, breast augers, wood post drills, and miners' drills of all types; shovels, miners' acetylene and oil lamps, caps, etc., etc.

Fulton Tools

We wish to say that we are now entering our thirty-third year in the tool business, and have made mining tools our specialty for that length of time. We feel justified in saying that we can furnish anything in this line, and that our tools have no equal n quality, durability, and finish on the market.

Capacity.

We have constantly increased our capacity until to-day we are the largest manufacturers of coal picks and miners' tools in the United States, and we are in a position to receive your future orders, which shall have our prompt and careful attention at all times.

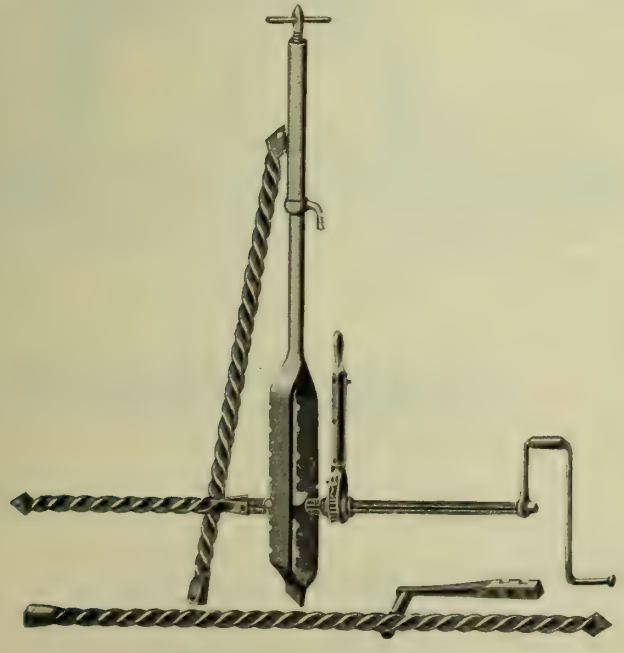
Our Coal Drill Department

is up-to-date and equipped with the latest automatic machinery, and every part of our Drills are made from the very best material. Our Post Bars are made from a special High Carbon Steel and the Augers from a special grade of steel manufactured for us. Our Malleable Castings are the best on the market, as they are made from selected stock and are well annealed.

We guarantee our parts to interchange with all similar makes of drills.

Let us have your next order for Drills, Repairs, etc.

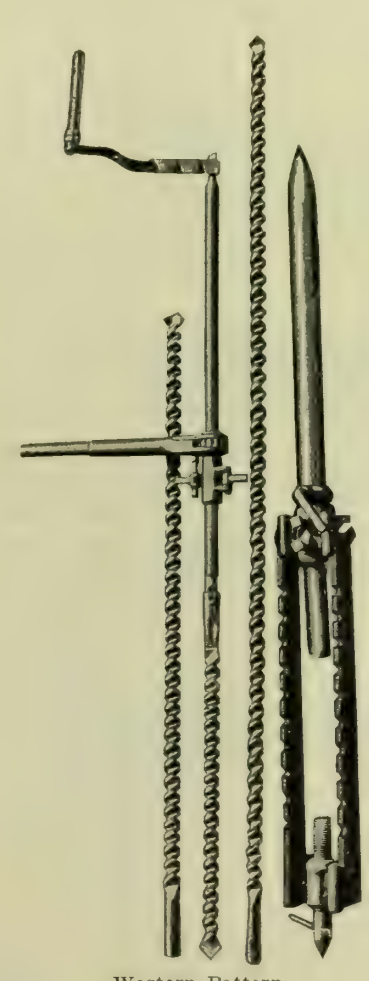
Thread Bars made with 6, 7, 8, 10, 12, or 14 threads per inch.



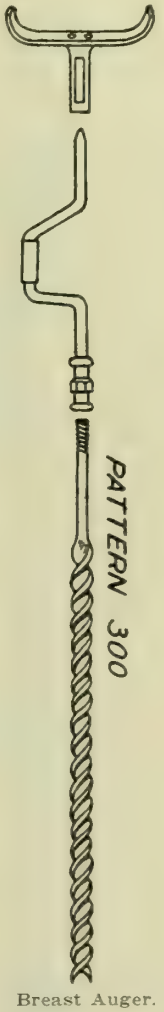
Eastern Pattern Rock Drill.

Breast Augers.

We are prepared to furnish anything required in this line. A trial order will convince you of the superiority of our products. We furnish breast augers in any size and length required, either single or double clank. Special patterns made to order.



Western Pattern Rock Drill.



Breast Auger.

Mining Machine Bits.

Our machine bits are made from a special analysis steel adapted to their use.



We can also furnish the above steel cut to length where companies make their own bits. We carry the following sizes in stock: ½" x ¾", ½" x ⅞", ½" x 1".

Catalogue

Let us send you our new catalogue, No. 4, showing our complete line of goods. It is free for the asking.

THE MARTIN HARDSOCG CO.

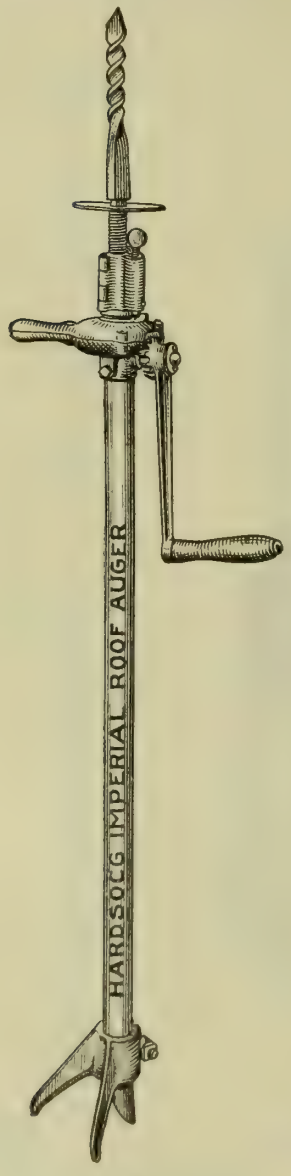
PITTSBURGH, PA.

Manufacturers Mining Tools and Supplies

Western Factory, Ottumwa, Iowa

In addition to the items illustrated below, which are especially designed for the personal use of coal companies in their own work, and some of which are new to many mine managers, we make every tool used by the coal miner. We cater especially to quality, and with nearly 40 years' experience should be able to serve you with intelligence. We can make any tool you need.

"Imperial" Automatic Feed Roof Auger, Patented.



This drill is especially designed for boring holes for insulator pegs.

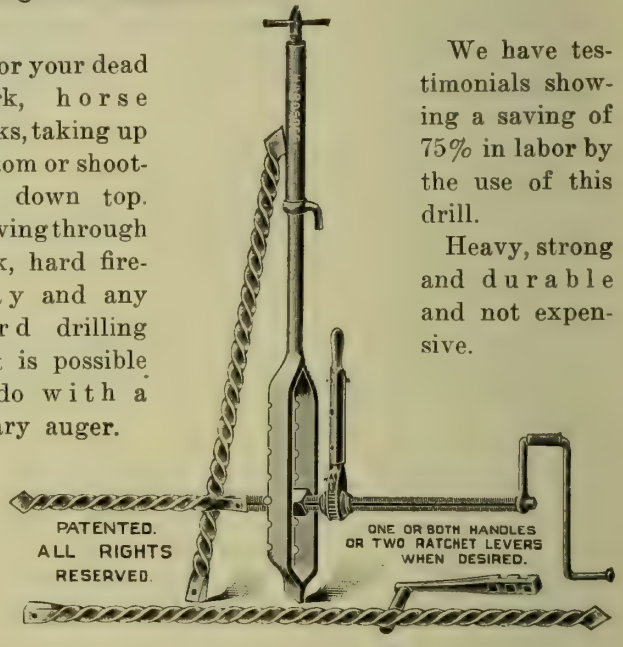
It adjusts itself automatically to hard or soft drilling by means of our patent feed feature, having the effect of any thread from the coarsest for fast work to the finest for hard rock—**on the same thread bar.** Being adjustable in height with reversible thread bar and quite light it is strictly a **one man drill** and is absolutely guaranteen to do your work or **your money back.**

Hardsocg Rock Ratchet Drill.

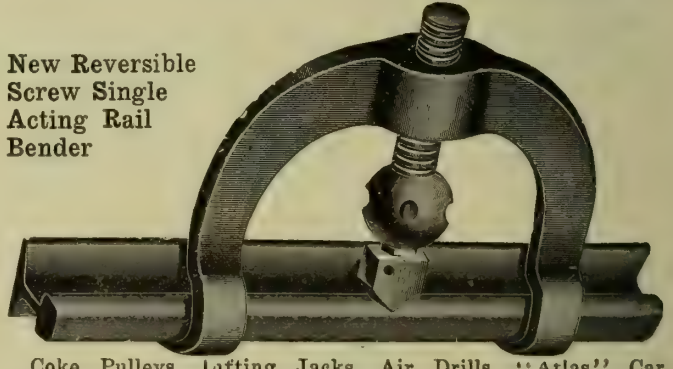
For your dead work, horse backs, taking up bottom or shooting down top. Driving through rock, hard fireclay and any hard drilling that is possible to do with a rotary auger.

We have testimonials showing a saving of 75% in labor by the use of this drill.

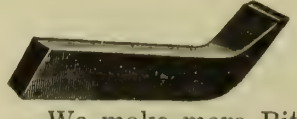
Heavy, strong and durable and not expensive.

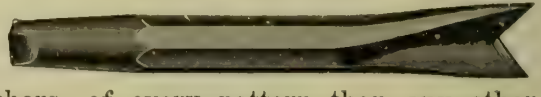


New Reversible Screw Single Acting Rail Bender



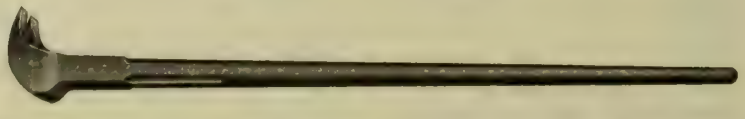
Coke Pulleys, Lifting Jacks, Air Drills, "Atlas" Car Movers. Better prices on same quality. Better quality at same prices on "HARDSOCG" goods.





We make more Bits and Punchers of every pattern than any other concern in the world. Get Prices.

Costs Little



Saves Much Labor

This is Hardsocg's New "Imperial" Tracklayers Spike Bar. Note the special heel for driving under spike. It is a wonder.

THE LEETONIA TOOL COMPANY

LEETONIA: OHIO U. S. A.



Manufacturers of

HIGH GRADE TOOLS

Coal and Rock Drills, Specialties

Products

Hand-operated Coal, Rock and Plug Drills in Wood and Steel Post and Grip Bar types, Breast Augers, Coal Picks, Roadmen's Picks, Cleaner Picks, Garden Picks, Sledges, Wedges, Steel and Copper Needles, Steel and Copper Tipped Tamp Drills, Steel and Copper Tipped Combined Tampers and Scrapers, Coal Chisels, Carpenters' Wrecking Bars, Post Hole Digging Bars, Slate Bars, Pinch Bars, Jimmy Bars, Spike Bars, Machine Bits, Bit Steel, Track Gauges, Tie Holders, Roadmen's Hatchets, Trackmen's Adzes, Socket Wrenches, Set Screws, Rail Benders, Pipe Tongs, Shovels, Saws, Mine Harps, Trolley Wheels, Oil Lamps, Carbide Lamps, Caps, etc.

Leetonia Tools are made from the best materials by skilled workmen. They are made, not with the object of having them interchange with other Tools that have been on the market for fifty years, but so as to enable the user to do more and better work with less effort. We are also prepared to make anything of a special character in our line.

Mr. Store Manager:

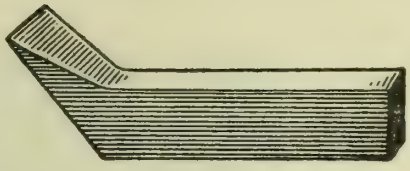
We know you want more customers, more profits. You are always figuring how to get them. Right here is where Leetonia Tools will help you just as they have others. Try them—you can't lose. We will take all the chances for we know that they will make good.

Mr. Mine Owner and Superintendent:

In these days of high wages and short hours you cannot afford to allow your day hands to work with poor Tools. Then, in fairness to yourself and us we ask you to carefully consider the many labor-saving tools which we manufacture. The prices we ask for them are so reasonable that you cannot afford to allow your blacksmith to make them.

Our Catalog illustrating and describing complete line of Tools and Supplies will be mailed upon request of Purchasing Agents, Mine Owners, Superintendents and Store Managers.

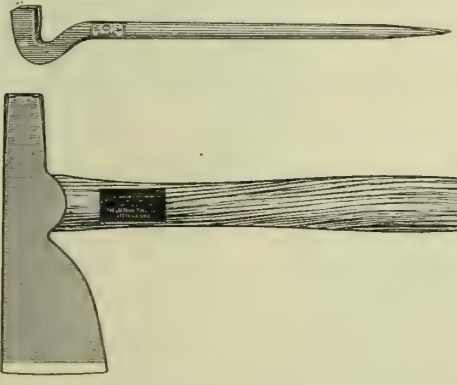
Chisel and Pick Point Bits
in sizes ½″ x ¾″, ½″ x ⅞″ and ½″ x 1″ in lengths of 4″ or 4½″. Our Bits will cut more tons of coal than any



other Bits made. A broad statement, but we will be glad to prove it.

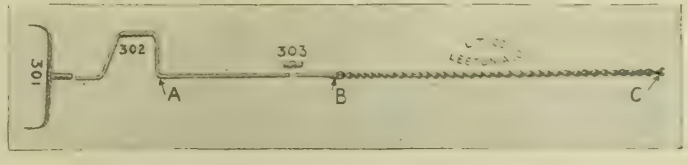


We have in stock for prompt shipment, the various sizes of Bit Steel, which we cut to any length. Our Steel is of special carbon. Prices reasonable. Trial order solicited.



We make more small Tools to be used by day hands than any other firm in America. There is a reason. We will gladly tell you why.

Where there is efficient management of coal or clay mines, there you will find Leetonia Tools.



We make Breast Augers in any size and length desired, either single or double crank.

NIXON MINING DRILL COMPANY

MANUFACTURES OF

Nixon Patent Rachet Mining Drills and Supports.

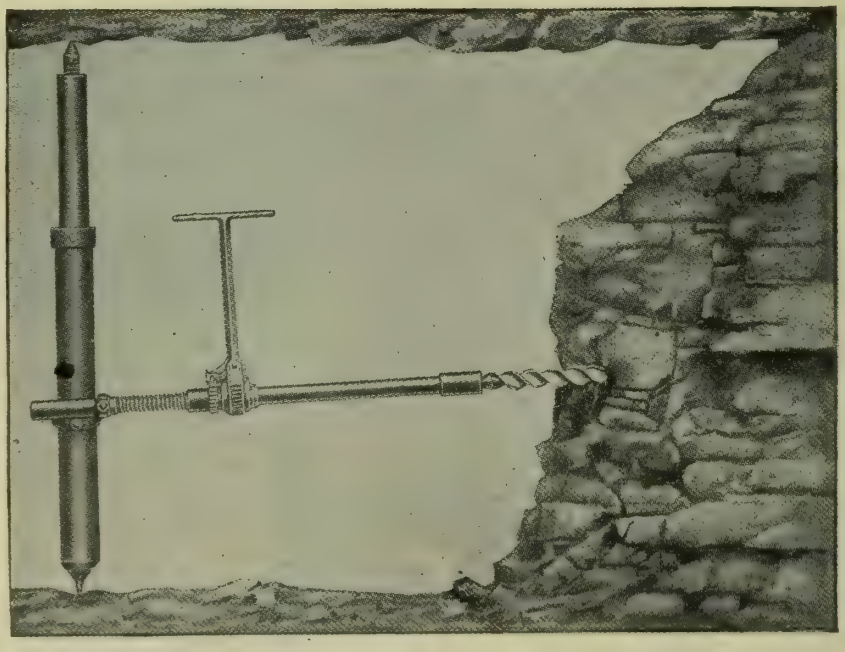
Office and Works--Chattanooga, Tenn

Products.

Manufacturers' Drills, Supports for Boring Coal, Iron Ore, Slate, Stone, etc.

Automatic Feed.

Automatic Feed, faster or slower, as material bored is soft or hard, ranging from 0 to 2½ turns per inch. Strong, simple, durable, economical — requiring but one man to operate, and works in any close place. Established in 1888. Favorably known in every mining camp in the United States and Mexico.



This illustration represents a Nixon Patent Rachet Mining Drill and Support set up in a Rock Entry.

Cheapness in Operation.

As a general proposition holes can be bored per foot, all costs considered, cheaper with **Nixon Ratchet Mining Drills** than with any other machine, hand or power. In mines already equipped with power it is frequently profitable to drive isolated or outlying entries or workings with **Nixon Drills.**

Special Features.

The **Nixon** has eight inches differential in set up of post, which no other drill has. All large mine supply houses handle **Nixon Ratchet Mining Drills** and supports. All **Nixon Drills** and parts are now branded with trade mark.

For Driving Entries.

Mining hard coal, iron ore, slate, etc., or taking top or bottom in coal or ore mines, it is the best drill in the world. Bores rock, slate and ore no other ratchet drill will bore. And any material that others will, the **Nixon Ratchet** bores faster and easier.

Get prices from dealers or commissary and accept nothing but the genuine **Nixon Drill.** Unscrupulous people are offering imitations made of inferior materials and workmanship.

For Boring Coal, Iron Ore, Slate, Stone, Etc.

Price of Drill only (either No. 1 or Patent Feed (P. F.)	$21.00
Support, under 5 feet	5.00
Set of Three Bits	5.00
One Drill complete	$31.00

Liberal discounts allowed purchasing agents and commissary storekeepers.

PROGRESS CAP FACTORY

Office and Factory, 215 W. Coal St., Shenandoah, Pa.

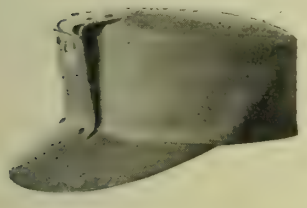
Manufacturers of

Mine Caps, Fitted for Oil, Carbide and Electric Mine Lamps

We Supply the Caps for the WICO, and Several Other Electric Mine Lamps

Everwear

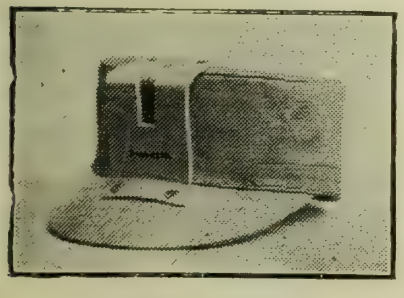
We have perfected a material which we call EVERWEAR that we now use for visors and lamp holders in our caps that is practically indestructable, it is practically oil and fire proof; actual tests proving that the more oil that was allowed to run on the visor and lamp holder the harder they became. We guarantee EVERWEAR to outlast all other materials now used in the manufacture of visors and lamp holders for mine caps. The lamp holder is rivited directly on the visor holding it rigid at all times. The cap has a cushion under the edge of the visor that prevents the visor from pressing the forehead of the wearer, one of the inconveniences of all mine caps that have no cushion.



Everwear, 164.

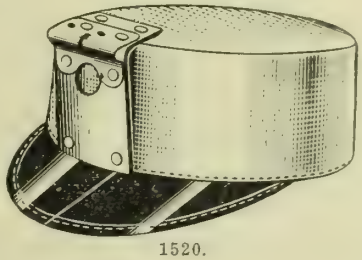
Progress Patent Mine Cap

This cap is the most durable and improved mine cap made It is made of heavy duck, and so constructed that it is comfortable, our cushion preventing it from pressing the forehead of the wearer. The holder is the PROGRESS PATENT holder, that holds the lamp on a level keel no matter what position the wearer is standing or stooping, thus preventing any oil from spilling out of the lamp, a frequent occurence with ordinary lamp holders. Its construction is such that it allows the proper lamp action vertically, but prevents the lamp from swinging latterally. It is fitted up entirely with solid leather visor and lamp holder the latter riveted onto the visor holding it rigid. The rivets are reinforced on the inside of the cap in such a manner that it is impossible for a rivet to pull out.

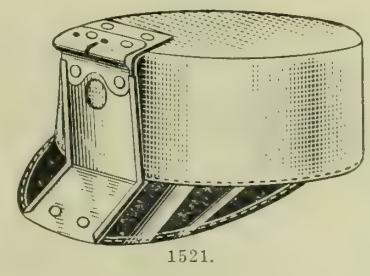


Progress Patent.

This cap is made up of white or brown duck, with oil-cloth or duck covered visor, fitted with our EVERWEAR, indestructable lamp holder, with tin plate reinforcement for holding the lamp in position.



1520.



1521.

This cap is same as the above but is fitted with a tin and fibre lamp holder riveted onto the visor to hold same rigid.

This cap is for winter wear. It protects the wearers ears without the inconvenience of skull caps, etc.

The ear warmers are attached directly onto the cap and may be folded up when not in use.

This cap is fitted up with the ear warmers to fold up into the cap as above or with a cloth band on the outside of the cap.



160.

We manufacture a complete line of mine caps comprising about fifty different numbers, and will be pleased to quote you prices on our line or on any special requirements you may have.

CHICAGO SALES BOOK COMPANY

Factory and Main Office

Desplaines & Randolph Streets. Chicago, Ill.

Manufacturers of

Counter Sales and Order Books---Duplicate or Triplicate

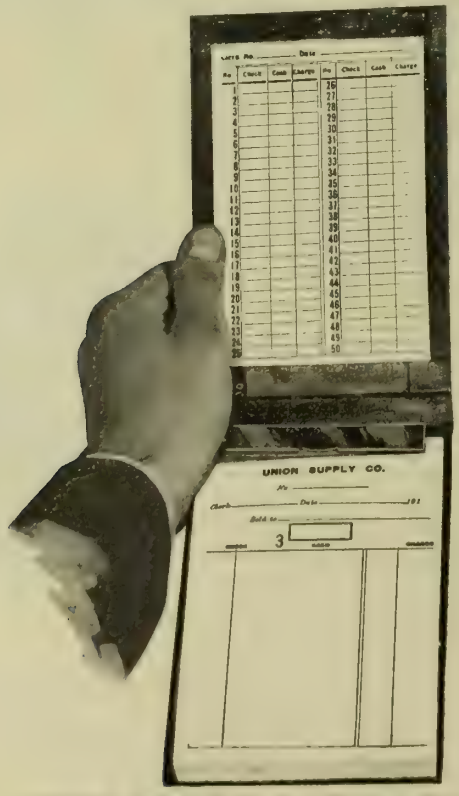
F. T. WINTER
General Sales Agent for Pennsylvania and West Virginia
Office, 4072 Jenkins Arcade Bldg, Pittsburgh, Pa.
Bell Phone 1956 Court.

Products

Salesman's Order Books.
Buyer's Order Books.
Manifold Books.
Address Books.
Credit Books.
Exchange Books.
Receipt Books.
Bank Deposit Books.
Carbon Coated Books.
Non-Duplicate Books.

Our Specialty

We manufacture any style or size of Order or Counter Sale Books for coal company stores, either for cash, check, or charge sales.



Duplicate Sales Book for Counter Use.

Facilities

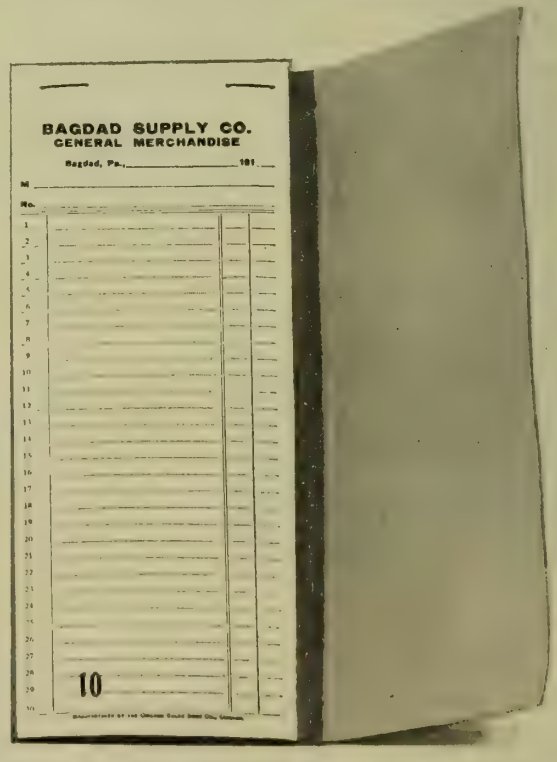
We have machinery designed and built especially for this class of work, which enables us to quote very attractive prices in this line. Send us a sample leaf from your book or a complete book, stating the quantity you generally contract for. We will then be pleased to quote our very lowest price on same.

Quality

Our service cannot be bettered. Workmanship and materials of the best.

If you are not using this method or are contemplating adapting this way of handling your store sales and orders, we would be pleased, upon request, to submit our whole plan and samples with prices.

We have salesmen in all territories and would be pleased to have one of our representatives call with a complete line to show you our method.



Duplicate Order Book Used In Taking Orders On Routes.

ALLISON COUPON CO.

INDIANAPOLIS, IND.

Manufacturers of

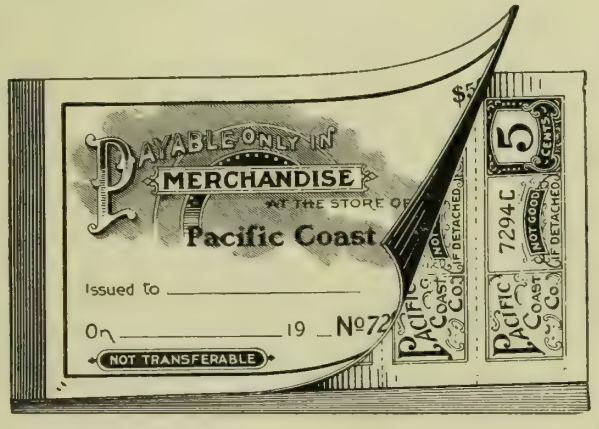
Allison Coupon Books for Use in "Company" Stores

Product—

In the beginning, Allison Coupon Books were thought out and manufactured especially to fill a requirement existing in the "company store."

The Allison Coupon System of today—perfected to the utmost in scientific accuracy, and recognized as a boon to so many different lines of business, is still essentially a "company store" proposition.

There is probably no other place where the Coupon System is more necessary—more nearly indispensable. It is, of course, possible for any company store—even a large one—to go right along performing its functions without the Allison Coupon System, but no such store ever saved anything by so doing.



From time immemorial there has been an urgent need of some arbitrary medium of exchange for employees who must be supplied from the store on some sort of account against the next time-check. This is evidenced by the general use, until recently, of metal disks, tags, paper slips, punch-out cards, pass-books, etc., which makeshifts rapidly disappeared on the advent of the Allison Coupon System.

One of the most important features of the Allison System is its simplicity. Where the former usages breed errors and misunderstandings, Allison Coupon books insure accuracy. Where loss was prevalent, and naturally to be expected, Allison Coupon books brought safety. Where the forerunners of Allison Books involved extra work and bother, the Allison System reduces bookkeeping to the minimum and eliminates every element of annoyance.

When an Allison Coupon Book is issued to the pay-roll employee, he signs for it on the form provided on the first leaf of the book, which the store keeper tears out and retains for the time-keeper, who deducts the amount from the man's next time-check. One entry on the books and the transaction is closed.

As the man requires goods from the store, he pays in coupons, just as he would pay in cash, and the coupons are kept and counted same as cash, but aside from this they have no value, and if lost or stolen are worth no more than waste paper to the finder.

The great plant where Allison Coupon Books are manufactured is devoted exclusively to this one task, and in every department is an astonishing model of efficiency. The Allison people have their own methods, perfected through long years of experience in supplying Coupon Books for the whole civilized world. Even the paper is especially made and the machinery built after their own designs. They do no commercial printing—even sending out their own printing such as stationery, catalogues, etc., to the commercial print shops.

So far have their efforts for accuracy been carried that a mistake in count or numbering is impossible.

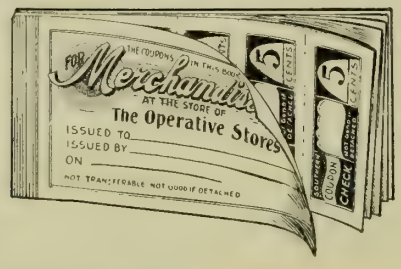
Practically every "company store" in the civilized world now uses the Allison Coupon System.

SOUTHERN COUPON COMPANY

Exclusive Manufacturers of COUPON BOOKS of Every Description

Office and Factory, Birmingham, Ala.

It is hardly necessary here to draw comparison between the Southern Coupon System and the loose check, and card "punch-outs." The Coupon System has long past its experimental stage, and has now become an "Indispensable medium" of discharging



obligations between the Company and its employees, without resorting to red tape and a lot of intricate bookkeeping. The Southern Coupon System is the safest and simplest method of accounting. In fact it is an automatic system of keeping accounts without bookkeeping.

Advantages of the Coupon System

Of what advantage will the use of coupon books be to you? Simply this—they will save you time and money, two important items with the modern business man.

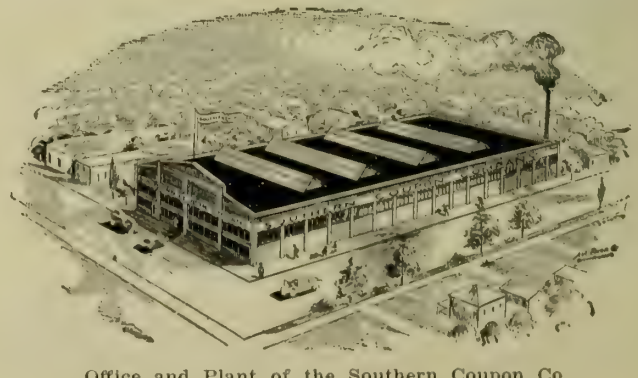
Instead of a multitude of petty transactions involving an interminable lot of bookkeeping and unknown possibilities of errors which can never be located, is substituted a simple, automatic, self-regulating system, so easy to grasp that the most ignorant patron cannot cavil nor can the most careless employee go wrong.

Perfect Check Upon All Transactions

No other method has ever been invented which in such a simple manner keeps a perfect check upon small cash or charge transactions, and so effectually stops the leaks to which, as is but too well known, such transactions are subject. A coupon book has no value whatever until it is regularly countersigned and issued. If lost or stolen, it is worthless. If issued it must be accounted for by a note, receipt or cash covering its full value. There is room for neither carelessness or dishonesty. At any moment of any day every coupon book on hand can be invoiced and all others accounted for. And when this is done the whole transaction is closed. The individual coupons are worthless, except as they are presented in the original book of which they are a part. The owner of the book has only one interest, to see that he gets all that is coming to him in exchange for the coupons he surrenders in payment therefor. And when so surrendered these coupons are of no value to the clerk who detaches them or to any other person into whose hands they might fall. He has no incentive to keep them or lose them, and it he does you are out nothing. Consequently they go into the only logical place they can go—into the cash drawer or other receptacle, so at the end of the day they can be added up and thus show the total sales.

The Southern Coupon Company confines itself exclusively to the manufacture of Coupon Books of every description, such as Mercantile, Ice, Laundry, Meal, Dairy, Street Railway, Automobile Supply, Club, and many other books, and with its large, modern plant and complete, up-to-date, automatic equipment is in position to handle all orders promptly and at minimum cost. Its product is printed in all modern languages and its market reaches the four corners of the world.

Further information, samples and prices will be cheerfully furnished to anyone interested, on application.



Office and Plant of the Southern Coupon Co



DIRECTORY OF COAL MINES

The Following Pages Contain a Complete Directory of Coal Mines in the United States and Canada in Alphabetical Order Starting With Alabama

Keystone Consolidated Publishing Co., Inc.

PUBLISHERS

601-603 HOUSE BUILDING, PITTSBURGH, PA.

ABBREVIATIONS

PO———Post Office Address.
SP———Freight Station of Mine.
CTY——County.
RR———Name of Railroad.
PR———Name of President.
VP———Name of Vice President.
TR———Name of Treasurer.
GM———Name of General Manager.
PA———Name of Purchasing Agent.
GS———Name of General Superintendent.
EM———Name of Mining Engineer.
MS———Name of Mine Superintendent.
MF———Name of Mine Foreman.
CE———Name of Consulting Engineer.
EE———Name of Electrical Engineer.
MM———Name of Master Mechanic.
SM———Name of Manager of Store.
SCO———Name of Supply Co. or Store.
S of H—System of Hauling.
S of M—System of Mining.
PP———Power Plant Equipment.
EMP——Number of Men Employed.
CO———Number of Coke Ovens.

ALABAMA

For List of Abbreviations See Page 498.

ABERNANT COAL CO.
General Office, Birmingham, Ala.
Abernant Mine, Slope, Blue Creek Seam, 6 ft 10 in. thick.
PO—Abernant, Ala. SP—Same. CTY—Tuscaloosa. RR—L. & N.
PR—J. B. McClary, Birmingham, Ala.
GM—J. B. McClary, " "
PA—J. B. McClary, " "
TR—F. G. Patton, " "
MS—D. E. Morrow, Abernant, "
EM—D. E. Morrow, " "
S of H—Mules. Track gauge, 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 500 H.P. 1 air compressor, 2 pumps.
EMP—125. Last fiscal year output, 46,751 tons. Sales agent E. J. Rowe, Birmingham, Ala.

ALABAMA CO. (THE)
General Office, Birmingham, Ala.
PR—J. Williams Middendorf, Balt., Md.
TR—J. E. Whitney, " "
VP—H. W. Coffin, " "
VP—W. E. Leake, " "
PA—E. B. Heiser..Birmingham, Ala.
SM—E. B. Heiser, " "
EM—E. C. Morgan, " "
Sales Agent, J. W. Porter, " "

Brookwood Mine, Slope and Drifts; Brookwood, Milldale & Carter Seams; 32 to 46 in. thick; operate washery.
PO—Brookwood, Ala.; SP—Same; CTY Tuscaloosa; RR—L. & N.
MS—A. W. Reed....Brookwood, Ala.
SM—S. H. Williams, " "
S of H—Mules and rope, track gauge 36 in.
S of M—Hand.
PP—4 Water tube and 3 return tubular boilers, total 700 H. P., 2 air comp. and 3 pumps.
EMP—250. Coke ovens, 315 Bee Hive. Last fiscal year output, 89,399 tons.

Lewisburg, (Mary Lee) Mine, Slope; Mary Lee Seam; 5 to 6 ft. thick; operate washery.
PO—Lewisburg, Ala.; SP—Boyles, Ala.; CTY—Jefferson; RR—Mary Lee.
MS—J. C. Caldwell..Lewisburg, Ala.
SM—A. T. Hogan, " "
S of H—Mules and rope, track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers total 400 H. P.; 2 pumps; purchase elec. power; gen. units, 220 volts A. C., 60 cycles.
EMP—230. Coke ovens, 350 Bee Hive. Last fiscal year output 257,902 tons.

Searles Mine; Drift, Brookwood and Milldale Seams, 72 to 84 in. thick; Operate Washery.
PO—Searles, Ala.; SP—Same; CTY—Tuscaloosa; RR—L. & N., Tuscaloosa Br.
MS—A. W. Reed.....Searles, Ala.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—6 Water tube, 3return tubular boilers, total 900 H. P., 1 gen. unit, 7 pumps.
EMP—400 Coke ovens, 250 Bee Hive. Last fiscal year output, 186,129 tons.

ALABAMA COAL MINERAL & LUMBER CO.
General Office, Reading, Pa.
Ruby Mine, Slope, Marylee or Big Seam 28 to 64 in. thick.
PO—Cordova, Ala.; SP—Same; CTY—Walker; RR—Southern.
PR—J. W. Weidner....Reading, Pa.
VP—T. C. Suman, " "
SEC—J. M. Endy, " "
TR—J. Boyer, " "
GM—W. R. Balmer....Cordova, Ala.
PA—W. R. Balmer, " "
S of H—Rope and 1 comp. air loco.; track gauge 40 in.
S of M—Hand.
PP—2 Water tube boilers, total 275 H. P., 1 air comp., 2 pumps.
EMP—105.
Note—In the hands of Receiver.

ALABAMA FUEL & IRON CO.
General Office, Birmingham, Ala.
PR—J. M. Overton..Nashville, Tenn.
TR—Overton Fullton, Birmingham, Ala.
GM—Chas. F. De Bardeleben,
PA—R. F. Culvahause..Birmingham, Ala.
SM—T. H. Conway, " "
EM—P. L. Dryer, " "
EE—Martin J. Lide, " "
GS—I. C. Delony, Margaret, Ala.
Sales Mgr. W. C. Adams, Birmingham, Ala.

Acton Mine, Slopes; Helena Seam; 5½ ft. thick.
PO—Acton, Ala.; SP—Same; CTY—Shelby; RR—L. & N., Helena Br.
MS—J. G. Steele.....Acton, Ala.
SM—W. A. Walker, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
PP—1 pump.
EMP—211. Last fiscal year output 178,540 tons.

Acmar Mine, Slope; Henry Ellen Seam; 12 ft. thick.
PO—Acmar, Ala.; SP—Same; CTY—St. Clair; RR—Cent. of Georgia Ry., Henry Ellen Br
MS—W. J. Hand.....Acmar, Ala.
SM—J. T. Upshaw, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
PP—1 pump; power from Central sta.
EMP—213. Last fiscal year output 319,405 tons.

Margaret Mine, Slope; Harkness Seam; 6 ft. thick; central washery. Output from all mines is washed.
PO—Margaret, Ala.; SP—Same; CTY—St. Clair; RR—Cent. of Georgia Ry., Henry Ellen Br.
MS—Wm. Evans.....Margaret, Ala.
SM—R. B. Ragsdale....Margaret, Ala.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—Central Station.
EMP—438. Last fiscal year output 363,611 tons.

ALTOONA COAL & IRON CO.
Vanzandt Mine.
PO—Altoona, Ala.; CTY—Etowah.
No report.

AMERICAN COAL CORPORATION.
General Office, Birmingham, Ala.
Burnwell Mine; Slope; Big Seam, 5½ ft. thick.
PO—Burnwell, Ala.; SP—Same. CTY—Walker. RR—Sou.
MS—B. Gilbreath, Jr., Burnwell, Ala.
MF—M. E. Moore.
S of M—Hand.
EMP—75. Last fiscal year output, 80,000 tons.

Pocahontas Mine, Shaft; Jagger Seam, 4½ ft. thick.
PO—Pocahontas, Ala; SP—Same. CTY—Walker. RR—Frisco.
MS—J. D. Roper, Pocahontas, Ala.
S of M—Hand.
EMP—23. Last fiscal year output 12,000 tons. State report.

AMERICAN CO-OPERATIVE COAL MNG. CO.
General Office, Birmingham, Ala.
Dulin Mine, Slope; Black Creek Seam; 28 to 34 in. thick; operate washery.
PO—Winfield, Ala.; SP—Dulin, Ala.; CTY—Marion; RR—Illinois Cent.
PR—Simon Levy....Birmingham, Ala
GM—Simon Levy, " "
PA—Simon Levy, " "
TR—Lionel Levy.....Jasper, Ala.
SM—Lionel Levy, " "
EM—Sumter Lee, Jr., Birmingham, Ala.
SCO—Levy and Schwab, Jasper, Ala.; Buyer, Lionel Levy.
S of H—Mules and rope; track gauge 36 in.
S of M—7 Comp. air mach.
PP—2 Return tubular boilers total 200 H. P., 2 comp.. 3 pumps.. Last fiscal year output, 18,200.

ATLANTIC COAL & COKE CO.
Seloca Mine; Slope; Jefferson Seam, 3½ ft. thick.
PO—Warrior, Ala.; SP—Seloca, Ala.; CTY—Jefferson; RR—L. & N.
PR—W. K. Saulsbury..Warrior, Ala.
MS—W. K. Saulsbury, " "
TR—W. T. Leake....Birmingham, Ala.
EM—A. H. Witt, " "
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler, 100 H. P., 3 pumps; power purchased.
EMP—150. Last fiscal year output 33,359.65 tons.

BARNEY COAL CO.
Barney Mine, Slope; Big Seam; 3 to 7 ft. thick.
PO—Cordova, Ala.; SP—Same; CTY—Walker; RR—Southern.
PR—T. N. Koehler....Chicago, Ill.
TR—M. G. Hubbard.....Cordova, Ala.
GM—M. G. Hubbard, " "
PA—M. G. Hubbard, " "
MS—W. A. Sprouil, " "
SM—G. C. Lewis, " "
CE—C. A. Brown, Birmingham, Ala.
S of H—Mules and rope; track gauge 40 in.
S of M—Hand.
PP—2 Casey-Hedges return tubular boilers, total 180 H. P.
EMP—100. Last fiscal year output 80,000 tons.

BARTON BROS.
Lynn Mine; Drift, Black Creek Seam, 28 in. thick.
PO—Lynn, Ala.; SP—Same. CTY — Winston. RR—Sou.
GM—Mack Barton .....Lynn, Ala.
MS—G. W. Vanderford, " "
S of M—Hand.
EMP—11. Last fiscal year output, 3,100 tons. State report.

BENOIT COAL MINING CO.
Drift Mine; Mary Lee Seam; 36 to 60 in. thick.
PO—Benoit, Ala.; SP—Same; CTY—Walker; RR—Frisco.
PR—R. H. Palmer.....Jasper, Ala.
TR—C. S. Bissell....Birmingham, Ala.
PA—C. S. Bissell, " "
MS—James Gallagher.....Benoit, Ala.
EM—James Gallagher, " "
SCO—Benoit Coal Min. Co., " "
EE—Mr. Pogue, " "
S of H—Elec. Loco.; track gauge 42 in.
S of M—Elec. Mach.
PP—2 return tubular boilers, total H. P. 400, 2 gen. units, 75 K. W.; last fiscal year output, 7,000 tons.

BESSEMER COAL, IRON & LAND CO
General Office, Birmingham, Ala.
Nos. 2, 7 and 8 Mines; Slopes and drifts. Youngblood and Thompson Seam, 2 ft. 9 in. to 6 ft. thick.
PO—Belle Ellen, Ala. SP—Same! CTY.. Bibb. RR—Birmingham Mineral.
PR—H. L. Badham..Birmingham, Ala.
TR—H. L. Badham, " "
EM—F. J. Imler, " "
GS—W. M. Lacey.....Belle Ellen, Ala.
PA—W. M. Lacey, " "
SM—J. H. Clifton, " "
S of H—Elec. loco., mules and rope.
S of M—Hand.
PP—3 boilers, total 900 H.P., gen units, 2,300 volts A.C.
EMP—500. Last fiscal year output, 218,969 tons.

BIG FOUR COAL CO.
Sand Stone Mine, Slope, Jefferson Seam 4 ft. thick; operate washery.
PO—Birmingham, Ala.; SP—North Birmingham; CTY—Jefferson; RR—Southern.
PR—J. H. Ham....Birmingham, Ala.
TR—J. H. Ham, " "
MS—W. A. Johnson, N. " "
S of H—Elec. Track gauge 36 in.
S of M—Hand.
EMP—15. Last fiscal year output 4742 tons.

BIG RIDGE COAL CO.
Big Ridge Mine, Slope; Pratt Seam, 42 in. thick.
PO—America, Ala.; SP—Cordova, Ala.; CTY—Walker; RR—Southern.
PR—J. M. Hayes.....Jasper, Ala.
GM—J. M. Hayes, " "
TR—H. B. Hayes, " "
PA—H. D. Cowden.....America, Ala.
SM—H. D. Cowden, " "
MS—J. D. Roper, " "
S of H—Mules, track gauge 3 ft.
S of M—Hand.

BIRMINGHAM COAL & IRON CO.
Mines now owned by the Woodward Iron Co.

BIRMINGHAM FUEL CO.
Townley Mine, Shaft, "Jagger" Seam, 54 to 66 in. thick; operate washery.
PO—Townley, Ala.; SP—Same; CTY—Walker; RR—Frisco.
PR—John R. Pill ..... Corona, Ala.
GM—John R. Pill, " "
TR—E. L. Adler....Birmingham, Ala.
PA—L. M. Adler, " "
MS—John R. Munfroy..Townley, Ala.
SM—E. C. Ellison, " "
EM—P. S. Haley.....Corona, Ala.
MM—Jas. Blenkinsopp....Townley, Ala.
SCO—Birmingham Fuel Co. Store. Buyer, E. C. Ellison, Towley, Ala.
S of H—Mules, track gauge 40 in.
S of M—17 Comp. air mach.
PP—4 Return tubular boilers total 600 H. P., 1 gen. unit, 115 volts, D. C.; 3 air comp., 1 pump.
EMP—300. Last fiscal year output, 156,000 tons.
Sales Agent, B. R. Smith, Birmingham, Ala.

BIRMINGHAM WATER WORKS (THE)
General Office, Birmingham, Ala.
Birmingham Water Works Mines; Slope; Blackness Seam, 3 ft. 9 in. to 4½ ft. thick.
PO—Birmingham, Ala., R. D. No. 4; CTY—Jefferson.
PR—A. M. Lynn, 50 Broad St., New York, N. Y.
TR—M. F. Riley, 50 Broad St., New York, N. Y.
GM—J. H. Purdy.....Pittsburgh, Pa.
PA—H. H. Horner..Birmingham, Ala.
GS—H. H. Horner, " "
MS—W. A. Merkel, " "
S of H—1 Steam loco. and mules; track gauge 32 in.
S of M—Hand.
PP—1 Return tubular boiler, 1 gen. unit, 1 pump.
EMP—16. Last fiscal year output 22750 tons.

BLACK CREEK COAL CO.
Nos. 1 and 2 Mines; Drifts; Black Creek Seam 24 to 40 in. thick; operate one washery.
PO—Nauvoo, Ala.; SP—Same; CTY—Walker; RR—Northern Ala.
PR—J. B. Whitfield....Dempolis, Ala.
TR—T. L. Sharpe.....Nauvoo, Ala.
GM—Wm. Cook, " "
MS—Wm. Cook, " "
EM—Wm. Cook, " "
PA—A. L. Haley, " "
SM—A. L. Haley, " "
CE—A. H. Witt....Birmingham, Ala.
S of H—Mules; track gauge 40 in.
S of M—8 Comp. air mach. and hand.
PP—3 Return tubular boilers, total 240 H. P., 2 air comp. and 4 pumps.
EMP—120. Last fiscal year output 39,991.2 tons.
Sales agent, F. A. Grider, Birmingham, Ala.

BLACK DIAMOND COAL MINING CO.
General Office, Birmingham, Ala.
PR—C. S. Bissell....Birmingham, Ala.
GM—C. S. Bissell, " "
SM—C. S. Bissell, " "
TR—H. E. Bissell, " "
PA—Ed. Ross, " "
CE—Martin Lide, " "
EM—T. O. Alexander..Townley, Ala.
GS—Jas. Gallagher.....Benoit, Ala.
MM—W. P. Jones, " "
EE—Mr. Pogue.....Benoit, Ala.
Sales Agent, H. E. Bissell, Brimingham, Ala.

Castella Mine; Shaft; Jaggers Seams, 4 to 6½ ft. thick; operate washery.
PO—Townley, Ala.; SP—Same; CTY—Walker; RR—Frisco.
MS—A. A. Herndon....Townley, Ala.
SM—G. H. Rush, " "
S of H—Rope and mules; track gauge 36 in.
S of M—8 Air mach.
PP—3 Return tubular boilers, total 375 H. P., 1 comp.
EMP—140. Last fiscal year output, 78,000 tons.

BLAIR COAL CO.
Blair Mine; Drift; Goree Seam; 42 in. thick.
PO—Tuscaloosa, Ala.; SP—Same; CTY Tuscaloosa; RR—Warrior River.
PR—F. G. Blair....Tuscaloosa, Ala.
PA—F. G. Blair, " "
TR—C. M. Culpepper, " "
MS—C. J. Greer .....Holt, Ala.
SM—C. J. Greer, " "
EM—C. M. Ayres....Tuscaloosa, Ala.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—16. Last fiscal year output 10,000 tons.
Sales Agent, F. G. Blair, Tuscaloosa, Ala

BLOCTON CAHABA COAL CO.
Coleanor Mine; Slope; Thompson Seam 5 ft. thick.
PO—Coleanor, Ala.; SP—Same; CTY Bibb; RR—L. & N., Sou.
PR—J. R. Smith, Jr., Birmingham, Ala.
GS—Jas. Wilcox.....Coleanor, Ala.
PA—Benj. E. Sherrod, " "
SM—Wm. Hopkins, " "
S of H—Mules.
S of M—Hand.
PP—7 Return tubular boilers, 3 pumps.
EMP—250. Last fiscal year output 100,000 tons.

BLOUNT COAL CO.
Inland Mine; Drift Mine; Jagger Seam, 3 ft. 8 in. thick.
Continued on Next Page.

BLOUNT COAL CO.—CONTINUED.
PO—Inland, Ala.; SP—Same. CTY—Blount. RR—L. & N.
MS—G. A. Davis, ... Inland, Ala
MF—G. R. Davis, " "
S of M—Hand.
EMP—40. Last fiscal year output, 13,000 tons. State report.

BRANCH COAL CO.
Nos. 4 and 6 and Wilson Mines; Slopes; Eureka Seam; 24 to 52 in. thick.
PO—Coal City, Ala. SP—Same. CTY—St. Clair; RR—S. A. L.
PR—H. N. Van Devander, Cedartown, Ga.
TR—H. N. Van Devander, " "
EM—H. N. Van Devander, " "
GM—C. R. Fay.....Coal City, Ala.
PA—C. R. Fay, " "
MS—C. R. Fay " "
S of H—Ropes; track gauge 3 ft.
S of M—Hand.
PP—3 Nagle return tubular boilers, toal 210 H. P., 3 Pumps.
EMP—61. Last fiscal year output, 17913 tons.

BRILLIANT COAL CO.
General Office, Birmingham, Ala.
GM—David Roberts, Birmingham, Ala.
EM—Sumter Lea, Jr., "
GS—E. W. Tarwater, Brilliant, Ala.
MM—D. Self, "

Brilliant Mine; Slope and Drift; Black Creek Seam, 24 to 32 in. thick.
PO—Brilliant, Ala.; SP—Same; CTY—Marion; RR—I. C.
MS—E. W. Tarwater..Brilliant, Ala.
S of H—Mules and elec., track gauge 36 in.
S of M—Comp. air.
PP—3 Rust water tube, 2 Atlas return tubular boilers, total 600 H. P., 3 gen. units D. C.
EMP—125. Last fiscal year output 47,618 tons.

Calumet; Slope; Big Seam, 4 to 6 ft. 7 in. thick.
PO—Jasper, Ala.; SP—Calumet, Ala.; CTY—Walker; RR—Sou, N. A. Div.
MS—S. W. Jackson.....Jasper, Ala.
S of H—Mules.
S of M—Hand and comp. air.
PP—1 Casey & Hedges return tubular boiler, 150 H.P.
EMP—45. Last fiscal year output 46,066 tons.

BROOKSIDE-PRATT MINING CO.
General Office, Birmingham, Ala.
Pinckney City, Stockton, Cardiff and Brookside Mines, Drifts; Pratt and "Nickle Plate" Seams; 32 to 36 in. thick.
PO—Cardiff, Ala.; SP—Same; CTY—Jefferson; RR—Southern.
PR—James Bonnyman, Birmingham, Ala.
GM—James Bonnyman, " "
PA—John Bonnyman, " "
TR—P. J. Garland, " "
MS—A. R. Long.....Cardiff, Ala.
SM—W. M. Rodgers, " "
CE—H. A. Turner, Birmingham, Ala
EM—H. A. Turner, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
EMP—200. Last fiscal year output 102,134 tons. Sales agent, Bonnyman-Norman, Birmingham, Ala.

BRYAN COAL CORPORATION.
Red Star Mine, Drifts; "Big" Seam; 4 to 6 ft. thick.
PO—Red Star, Ala.; SP—Same; CTY—Walker; RR—Southern.
PR—Frank Nelson, Jr., Birmingham, Ala.
TR—Geo. Cole Scott, ..Richmond, Va.
MS—W. A. Upton....Red Star, Ala.
PA—N. R. Shockley, " "
EM—Theo. Nelson, " "
S of H—Rope.
S of M—Hand
PP—4 Return tubular boilers, 2 pumps.
EMP—150. Last fiscal year output 93,332 tons.
Sales Agency, F. A. Grider, Birmingham, Ala.

BURNWELL COAL MINING CO.
Burnwell Mine; Slope; Big Seam 3 to 7 ft. thick.
PO—Burnwell Mines, Ala.; SP—Same; CTY—Walker; RR—Southern.
PR—Priestly Toulmin, Birmingham, Ala.
TR—S. L. Yerkes, " "
CE—H. A. Turner, " "
GM—H.E.Fleetwood, Burnwell Mines, Ala
PA—H. E. Fleetwood, " "
MS—T. M. Byram, " "
SM—M. L. Tubb, Burnwell Mines, Ala.
MM—J. J. Martin, " "
S of H—Mules and Rope; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 310 H. P., 3 pumps.
EMP—75. Output for 8 months 49,000 tons.
Sales Agent, F. A. Grider, Birmingham, Ala.

BUTTAHATCHEE COAL CO.
Mary Etta Mine; Drift; Black Creek Seam, 28 to 36 in. thick.
PO—Delmar, Ala.; SP—Same; CTY—Winston; RR—Sou.
PR—Opie Gamble.....Delmar, Ala.
GM—Opie Gamble, " "
MS—Opie Gamble, " "
TR—W. A. Gamble, " "
PA—W. A. Gamble, " "
SM—W. A. Gamble, " "
EM—J. R. Smith, " "
S of H—Mules and rope, track gauge 36 in.
S of M—Hand.
EMP—17. Last fiscal year output 7500 tons.

CAHABA COAL CO.
Coalmont Mine. Sold to the Helena-Cahaba Mining Co.

CAHABA CENTRAL COAL COMPANY.
Leland Slope Mine; Slope; Schute or Youngblood Seam; 2 to 4 ft. thick.
PO—West Blocton, Ala.; SP—Blocton, Ala.; CTY—Bibb. RR—A. G. S. Sou., L. & N., and M. & O.
PR—W. R. Young...West Blocton, Ala.
PA—W. R. Young, " "
TR—Geo. W. Randall, " "
MS—J. P. Rind, " "
EM—C. C. Huckabee, Birmingham, Ala.
S of H—Mules and rope, track gauge 39 in.
S of M—Hand.
PP—1 Water tube; 1 Air comp.; 1 pump.
EMP—46. New Mine.
Sales Agent, J. W. Lewis, 217 Woodward Bldg., Birmingham, Ala.

CAHABA SOUTHERN COAL MINING CO.
Hagrave Mine; Slope, Underwood Seam, 66 in. thick.
PO—Hargrove, Ala.; SP—Same; CTY—Bibb; RR—Sou. L. & N.
PR—Daniel Pierson, Jr...Newark, N. J.
GM—Harold R. Sanson, Birmingham, Ala.
EM—A. H. Witt " "
MS—Frederick Dorricott, Hargrove, Ala.
S of H—Mules and rope; track gauge 42 in.
S of M—Hand.
PP—4 Return tubular boilers, total 500 H. P., 1 compressor.
EMP—150. Sales Agent, F. A. Grider, Birmingham, Ala.

CALEDONIA COAL CO.
Bankhead Mine; Shaft; Mary Lee Seam, 54 to 108 in. thick.
PO—Jasper, Ala.; SP—Bankhead, Ala.; CTY—Walker; RR—Northern Ala.
PR—J. H. Bankhead, Jr., Jasper, Ala.
TR—W. B. Bankhead, " "
GM—W. D. Leake, " "
MS—J. S. Waldorp, " "
SM—C. S. Howard, " "
EM—A. H. Witt....Birmingham, Ala.
S of H—Mules, track gauge 40 in.
S of M—4 Comp. air mach. and hand.
PP—2 Return tubular boilers, 1 comp.
EMP—100. Last fiscal year output 77,602 tons.

CARBON HILL & LOST CREEK COAL CO.
Out of business.

CARBON HILL MINING CO.
Carbon Hill Mine, Slope; Jagger Seam; 4 to 5 ft. thick.
PO—Carbon Hill, Ala.; SP—Same; CTY—Walker; RR—Frisco.
PR—J. M. Townley—Carbon Hill, Ala.
GM—J. M. Townley, " "
TR—N. T. Peters, " "
MS—N. A. Lipscomb, " "
EM—Jas. Nicol, " "
S of H—Mules and rope, track gauge 36 in.
S of M—Hand.
PP—2 Boilers total 130 H. P.; 1 pump.
EMP—40. Last fiscal year output 38,327 tons.

CARDIFF MINING CO.
Riverside Mine; Drift; Nickelplate Seam, 30 to 36 in. thick.
PO—Cardiff, Ala.; SP—Same; CTY—Jefferson; RR—Sou.
PR—L. B. Pettiford, ...Cardiff, Ala.
TR—W. R. Pettiford, " "
GM—Chas. Hodge, " "
GS—Chas. Hodge, " "
S of H—Mules; track gauge 35 in.
S of M—Hand.
EMP—75. Output 150 tons per day. Sales Agency, Bonnyman-Norman Coal Co.

CENTRAL COAL CO.
General Office, Birmingham, Ala.
J. P. Pearson & R. A. Monaghan, Receivers.
Kimberly No. 2 Mine; Slope; Jefferson Seam, 34 in. thick.
PO—Kimberly, Ala.; SP Same. CTY—Jefferson. RR—L. & N.
GM—J. P. Pearson, Birmingham, Ala.
PA—J. P. Pearson, " "
MS—S. W. Nordan, .. Kimberly, Ala.
SM—P. A. Ellis, " "
S of H—Elec. loco. and mules.
S of M—Elec. mach. and hand.
PP—5 Boilers, total 380 H.P., gen. unit 100 K.W., D.C.

CENTRAL IRON & COAL CO.
General Office, Holt, Ala.
Kellerman Mine; Drift; Brookwood & Milldale Seam; 66 in. to 72 in. thick; operate washery.
PO—Kellerman, Ala.; SP—Same; CTY Tuscaloosa; RR—M.&O. and Southern.
PR—Waddill Catchings, New York, N.Y.
TR—de Courcey Cleveland, " "
GM—W. T. Kluttz.....Holt, Ala.
PA—W. M. Joyner, " "
CE—H. S. Geismer..Birmingham, Ala.
MS—G. M. Powell....Kellerman, Ala.
SM—M. Martin, " "
EM—Hays Howell, " "
MM—J. W. Morgan.....Holt, Ala.
S of H—Mules, 3 air comp. and 3 gasoline loco., track gauge 44 in.
S of M—Hand.
PP—5 Water tubular Boilers, total 750 H. P.; 3 Air comp., 6 pumps.
EMP—300. 161 Bee Hive coke ovens and 60 by product. Last fiscal year output 199,434 tons.

CHABERT COAL CO.
West Corona Mine; Slope; Corona Seam, 32 in. thick.
PO—Corona, Ala.; SP—Same; CTY—Walker; RR—Southern.
PR—C. P. Chabert, ...Corona, Ala.
GM—C. P. Chabert, " "
PA—C. P. Chabert, " "
GS—L. E. Chabert, " "
MS—L. E. Chabert, " "
CE—P. S. Haley, " "
SCO—Chabert Merc. Co., " "
S of H—Mules and rope.
S of M—7 Comp. air machines.
PP—2 Boilers, 1 compressor, 3 pumps.
EMP—115. Last fiscal year output 41,997.34 tons.
Sales Agency, H. P. Gibson, Corona, Ala.
Operated under lease from the West Corona Coal Co.

CHILDERS, S. J., & SON.
Childers Mine, Slope, "Coal City" Seam, 4 to 5 ft.
PO—Jasper, Ala.; SP—Same; CTY—Walker; RR—Frisco & Southern.
PR—S. J. Childers.....Jasper, Ala.
GM—T. M. Childers, " "
MS—T. M. Childers, " "
SM—S. J. Childers, " "
S of H—Horses; track gauge 36 in.
S of M—Hand.
Last fiscal year output 1200 tons.

CITY COAL CO.
PO—Jasper, Ala.; CTY—Walker.
No report.

CLIMAX COAL CO.
Climax Mine; Slope; Climax Seam, 2 ft. thick.
PO—Maylene, Ala.; SP—Same. CTY—Shelby. RR—Sou.
GM—G. F. Peter, ... Maylene, Ala.
PA—G. F. Peter, " "
EM—G. L. Chamberlain, " "
MS—J. S. Kellum, " "
SM—J. H. McMath, " "
S of H—Rope and mules.
S of M—Hand.
PP—4 boilers, total 400 H. P.
EMP—90. Last fiscal year output 24,678 tons.

COAL CITY MINING CORPORATION.
General Office 41 Broad street, New York, N. Y.
Coal Branch No. 3, Outcrop No. 2 and Glenn Mines; Slope; Coal City Seam, 36 to 96 in. thick.
PO—Coal City, Ala.; SP—Same; CTY—St. Clair; RR—Seaboard Air Line, Pell City Br.
PR—F. T. Rubidge....New York, N. Y.
TR—F. W. Taylor, " "
GS—M. L. O'Neele.....Coal City, Ala.
PA—M. L. O'Neele, " "
SCO—Alveron & Moore, " "
S of H—Mules; Track gauge 36 in.
S of M—Hand.
PP—4 return tubular boilers, total 320 H. P., 2 compresors, 3 pumps.
EMP—90. Last fiscal year output 52,155 tons. Sales Agency, F. A. Grider, Birmingham, Ala., successors to the Seaboard Coal & Coke Company.

COMMERCIAL COAL MINING CO.
General Office, Birmingham, Ala.
Commercial Mine, Drift, Big Seam, 66 to 84 in. thick.
PO—Dora, Ala.; SP Same; CTY—Walker; RR—Frisco, Empire Br.
PR—C. S. Bissell....Birmingham, Ala.
GM—C. S. Bissell, " "
TR—H. W. Bissell, " "
CE—Martin Lide, " "
EM—T. A. Alexander....Townley, Ala.
GS—James Gallagher.....Benoit, Ala.
EE—Mr. Pogue, " "
MS—W. H. Martin.....Dora, Ala.
SM—T. S. Williams, " "
S of H—Steam loco and mules; track gauge 36 in.
S of M—Hand.
EMP—90. Last fiscal year output 60,000 tons.

CONNORS-WEYMAN COAL CO.
General Office, Birmingham, Ala.
Rolling Mill Mine, Slope, Helena Seam, 4 ft. thick.
PO—Helen, Ala.; SP—Same. CTY—Shelby. RR—L. & N.
MS—A. Lickard .....Helena, Ala.
S of M—Hand.
EMP—95. Last fiscal year output, 47,435 tons. State report.

CONSUMERS COAL & FUEL CO.
General Office, Birmingham, Ala.
Yarbrough Mine; Slope; Jagger Seam, 40 to 42 in. thick.
PO—Nauvoo, Ala.; SP—Same; CTY—Walker; RR—Southern, Northern Ala. Branch.
PR—S. J. Gaines, Birmingham, Ala., & Nauvoo, Ala.
GM—S. J. Gaines, Birmingham, Ala., & Nauvoo, Ala.
TR—E. T. Dickson, Birmingham, Ala.
MS—M. J. Boshell, ...Nauvoo, Ala.
S of H—1 Steam Loco., mules and ope.
S of M—Hand.
PP—1 Pump.
EMP—15. Output 4 months, 5,000 tons.

CORONA COAL & IRON CO.
General Office, Birmingham, Ala.
TR—E. L. Adler....Birmingham, Ala.
PA—L. M. Adler, " "
GM—John R. Pill.....Corona, Ala.
EM—P. S. Haley, " "
MM—C. M. Waldran.....Patton, Ala.
SM—J. W. Porter.....Corona, Ala.
Sales Mgr., B. R. Smith, Birmingham, Ala.

Corona No. 3 Mine and Coke Ovens; Drift; Corona Seam, 36 to 52 in. thick; operate washery.
PO—Corona, Ala.; SP—Same; CTY—Walker; RR—Sou.
MS—P. S. Savage, ... Corona, Ala.
SM—W. D. Allison, " "
S of H—Mules and rope; track gauge 36 in.
S of M—6 Comp. air mach., hand.
PP—3 Return tubular boilers, total 300 H. P., 1 comp. and 5 pumps; Some air from Patton.
EMP—161. Last fiscal year output 104,092 tons.

Patton Mine; Drift; Corona Seam, 38 to 52 in. thick.
PO—Patton, Ala.; SP—Same; CTY—Walker; RR—Sou.
MS—J. K. Kirkwood....Patton, Ala.
SM—L. L. Allison, Patton, Ala.
S of H—2 Gasoline loco. and mules; track gauge 36 in.
S of M—16 Comp. air mach.
PP—6 Return tubular boilers total 990 H. P., 1 gen. unit 2,300 volts A.C., 3 phase 60 cycles, 2 comp. and 5 pumps.
EMP—246. Last fiscal year output 163586 tons.

Better Chance, Drift, "Corona" Seam 42 in. thick.
PO—Coal Valley, Ala.; SP—Oakman, Ala.; CTY—Walker; RR—Southern.
MS—Albert Plan....Coal Valley, Ala.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—16. Last fiscal year output 7105 tons.

Mary Emma Mine, Drift, "Corona" Seam, 42 in. thick.
PO—Coal Valley, Ala.; SP—Oakman, Ala.; CTY—Walker; RR—Southern.
MS—R. H. McLendon, Coal Valley, Ala.
S of H—Mules and 1 steam loco; track gauge 36 in.
S of H—Hand.
EMP—68. Last fiscal year output 47,274 tons.

Coal Valley Mine, Drift, "Corona" Seam 38 to 50 in. thick.
PO—Coal Valley, Ala.; SP—Oakman, Ala.; CTY—Walker; RR—Southern.
MS—John McKendrick, Coal Valley, Ala.
SM—R. H. McLendon, " "
S of H—Mules and 1 elec. loco.; track gauge 36 in.
S of M—9 Comp. air and 32 elec. mach.
PP—4 Return tubular boilers total 600 H.P., 1 gen. unit, 250 volts D.C. 1 air compressor, 3 pumps.
EMP—193. Last fiscal year output 105,791 tons.

Mine No 7, Drift, "Corona" Seam, 42 in. thick.
PO—Coal Valley, Ala.; SP—Oakman, Ala.; CTY—Walker; RR—Southern.
MS—J. M. Kirkwood, Coal Valley, Ala.
S of H—Mules; track gauge 36 in.
S of M—Hand.
Last fiscal year output 28791 tons.
Lockhart Mine abandoned.

CRESCENT COAL CO.
See Atlantic Coal & Coke Co.

CULLMAN COAL & COKE CO.
General Office, Cullman, Ala.
Juliana Mine, Drift; Black Creek Seam.
PO—Bremen, Ala. SP—Same. CTY—Cullman. RR—L. & N.
Receivers, Parker Bank & Trust Co., Cullman, Ala.

DAVIS COAL MINING CO.
Nauvoo No. 1 Mine.
PO—Nauvoo, Ala.; CTY—Walker.
No report.

DAVIS CREEK COAL & COKE CO.
Rock Castle Mine, Slope; Jagger Seam; 6 ft. thick.
PO—Rock Castle, Ala.; SP—Same; CTY—Tuscaloosa; RR—L. & N.
PR—J. C. Maben....New York, N. Y.
TR—J. C. Maben, Jr, Birmingham, Ala.
GM—T. H. Tutwiler, Rock Castle, Ala.
SEC—T. H. Tutwiler, " "
PA—T. H. Tutwiler, " "
MS—Geo. Kuffner, " "
SM—B. L. Bradley, " "
MM—J. B. Ambrose, " "
CE—A. H. Witt,...Birmingham, Ala.
EM—A. H. Witt, " "
S of H—Mules and rope, track gauge 36 in.
S of M—Hand.
PP—4 Boilers total 500 H. P., 1 air comp.; 4 pumps.
EMP—155. Last fiscal year output 112,249.32 tons.
Sales Agent, Bonnyman-Norman Coal Co., Birmingham, Ala.

DE BARDELEBEN COAL CO., INC.
General Office, Brown-Marx Bldg., Birmingham, Ala.
Sipsey Mine; Drift. Block Creek Seam, 30 to 40 in. thick.
PO—Sipsey, Ala.; SP—Same; CTY—Walker; RR—Frisco.
PR—H. T. De Bardeleben..Birmingham, Ala.
TR—H. T. De Bardeleben..Birmingham, Ala.
PA—G. W. Bowers..Birmingham, Ala.
GM—Milton H. Fies.....Sipsey, Ala.
PA—G. W. Bowers " "
EM—L. V. Harville, " "
MM—M. T. McGowan, " "
SM—A. J. McDanal, " "
S of H—6 elec. loco.; track gauge 42 in.
S of H—11 elec. mach.
PP—2 return tubular boilers, total 350 H. P.
EMP—500. Last fiscal year output 241,000 tons.
Successors to the Maryland Coal & Coke Company.

DEAN-FEARY COAL CO.
Calvert Band Mine.
PO—Warrior, Ala.; CTY—Jefferson.
No report.

DE SOTO COAL MINING & DEVELOPMENT CO.
(In the hands of a Receiver.)
Indio Mine; Shaft Jefferson Seam, 30 to 42 in. thick.
PO—Morris, Ala. SP—Indio, Ala.; CTY—Jefferson; RR—L. & N.
GM—R. A. Porter, Trustee.
PA—R. A. Porter, Trustee.
CE—A. J. Reilly.....Inland, Ala.
SCO—Indio Store, Buyer, R. C. De Shazo, Morris, Ala.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Wangler, boilers, total 120 H. P., 3 pumps.
EMP—18. Last fiscal year output 50,000 tons.

DONALDSON-GRANT COAL CO.
General Office, Ensley, Ala.
Nos. 1, 3 and 4 Mines; Drifts; Pratt Seam, 38 to 40 in. thick.
PO — Watson, Ala.; SP — Mineral Springs, Ala.; CTY—Jefferson; RR—L. & N., Praco Branch.
PR—G. J. Grant, ...Watson, Ala.
TR—J. M. Donaldson, Ensley, Ala.
MS—S. J. Routledge, " "
EM—G. Mitchell, Birmingham, Ala.
S of H—1 Steam loco. and mules; track gauge 36 in.
S of M—Hand.
PP—3 Pumps.
EMP—50; Output 250 tons per day.
Sales Agents, Eldorado Coal Co., Birmingham, Ala.

DOUGLAS BRANCH COAL CO.
See Eagle Coal Mining Co.

EAGLE COAL MINING COMPANY.
General Office, Birmingham, Ala.
Drift; "Jagger" Seam; 6 ft. thick.
PO—Jasper, Ala.; SP—McCullum, Ala.; CTY—Walker; RR—Frisco.
PR—J. W. Lewis..Birmingham, Ala.
VP—W. F. Hopkins, " "
TR—M. O. Travis, Birmingham, Ala.
PA—D. O. Hopkins.....Jasper, Ala.
EM—John Smith, " "
MM—Ed. Childers, " "
MS—L. E. Broom, " "
S of H—1 Gasoline loco., track gauge 42 in.
S of M—Hand.
PP—2 Boilers; 3 pumps.
EMP—50. Last fiscal year output, 35,000 tons.
Sales agent, J. W. Lewis, Birmingham, Ala.

EAST PRATT COAL CO.
General Office, 205-6 Woodward Bldg., Birmingham, Ala.
Clift Mine, Drift; Pratt Seam; 36 in. to 44 in. thick.
PO—R. 7, Box 53, Birmingham, Ala.; SP—Clift, Ala.; CTY—Jefferson; RR—L. & N., Cain Creek Br.
PR—J. T. Morgan..Birmingham, Ala.
TR—J. T. Morgan, " "
CM—T. W. Morgan, Birmingham, Ala.
MS—T. W. Morgan, " "
EM—T. W. Morgan, " "
PA—D. S. Acuff, " "
SM—D. S. Acuff, " "
S of H—Mules, and 1 gasoline loco.; track gauge 36 in.
S of M—Hand.
EMP—60. Last fiscal year output 40,000 tons.

EDMONDS COAL CO.
Eclipse Mine, Drift; Black Creek Seam, 24 to 33 in. thick.
PO—Natural Bridge, Ala.; SP—Same, CTY—Winston; RR—N. A.
PR—J. A. Edmonds, Natural Bridge, Ala.
CM—J. A. Edmonds, " "
PA—J. A. Edmonds, " "
MS—J. A. Edmonds, " "
CE—E. P. Lintz....Birmingham, Ala.
S of H—Mules and Rope; track gauge, 36 in.
S of M—Hand.
EMP—62. Last fiscal year output, 19,056 tons.
Sales agency, Alabama Coal Mining Co.

ELDORADO COAL CO.
General Office, Birmingham, Ala.
Eldorado No. 1 Mine; Drift, Pratt Seam, 38 in. thick. RR—L. & N.
MS—T. J. Payne, ... Republic Ala.
MF—C. A. Haynes, " "
S of M—Hand.
EMP—80. Last fiscal year output 24,292 tons.

E and D Mines; Slope and drift; Pratt Seam 38 in. thick. RR—Sou.
MS—John Neill, Coalburg, Ala.
S of M—Hand.
EMP—50. Last fiscal year output, 43,605 tons. State report.

EMPIRE COAL CO.
General Office, Birmingham, Ala.
Empire Mine; Drift, Black Creek Seam, 26 to 48 in. thick.
PO Empire, Ala.; SP Same; CTY—Walker; RR—Frisco.
PR—Frank Nelson....Birmingham, Ala.
TR—W. H. Duran, " "
GM E. B. Nelson.....Empire, Ala.
GS—T. L. Nelson, " "
EM—T. L. Nelson " "
MS—T. L. Nelson, " "
MM S. W. Hamlet, " "
S of H—2 gasoline loco.; track gauge 36 in.
S of M—35 Comp. air mach.
PP—7 Casey-Hedges return tubular boilers, total 1,000 H. P., 3 compressors, 3 pumps.
EMP 450; coke ovens 100 Bee Hive. Last fiscal year output 192,000 tons.

EUREKA COAL CO.
General Office, Birmingham, Ala.
Eureka No. 2 Mine; Slope; Helena Seam 36 to 72 in. thick.
PO—Helena, Ala.; SP—Falliston, Ala.; CTY—Shelby; RR—L. & N., A. R. & A.
PR—G. W. Connors, Birmingham, Ala.
GM—G. W. Connors, " "
TR—W. M. Hoke, " "
PA—W. M. Hoke, " "
CE—Motley & Dryer, " "
GS—G. W. Postell, ...Helena, Ala.
EM—G. W. Postell, " "
MM—J. E. Douglass, ...Helena, Ala.
EE—J. E. Douglass, " "
SCO—Roebuck Commissionary, " "
S of H—1 Elec. loco. and mules. Track gauge 36 in.
S of M—Hand.
PP—2 C. J. Walton & Sons, return tubular boilers, total 300 H.P., gen. unit 250 volts D.C., 2 pumps.
EMP—180. Last fiscal year output, 90,000 tons.
Sales Agency, D. H. Brown & Co., Birmingham, Ala.

EXCELSIOR COAL & IRON COMPANY.
Excelsior Mine, Slope; Jagger Seam; 3 to 5 ft. thick.
PO—Cordova, Ala. SP—Same. CTY—Walker; RR—Frisco, I. C. and Southern.
PR—D. S. Gregg.....Cordova, Ala
TR—A. M. Konkle, " "
PA—A. M. Konkle, " "
MS—W. L. Miller, " "
SM—A. M. Konkle, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler total 100 H. P.; 1 engine; 1 pump.
EMP—35. Last fiscal year output 25,000 tons.

EXPORT PRATT COAL CO.
Export Pratt Mine, Drift, Nickle Plate Seam, 32 to 38 in. thick.
PO Quinton, Ala.; SP Praco, Ala.; CTY—Jefferson; RR—L. & N.
PR C. C. Ferrell.....Quinton, Ala.
GM—C. C. Ferrell, " "
TR—Mrs. E. T. Taliaferro " "
PA—R. C. Harvey, " "
EM C. E. Miller, " "
MS—L. F. Bryson, " "
S of H—Mules.
S of M—Hand.
EMP—45. Last fiscal year output 13,472 tons.

FAIRCHILDS COAL & COKE CO.
Fairchilds Mine; Drift; Jogden Seam 3 ft. 10 in. thick.
PO—Inland, Ala.; SP—Same; CTY—Blount; RR—L. & N.
PR—Mrs. A. J. Reilly,....Inland, Ala.
TR—Mrs. A. J. Reilly, " "
GM—Mrs. A. J. Reilly, " "
PA—G. A. Hallman, " "
MS—G. A. Hallman, " "
SM——G. A. Hallman, " "
EM—Alex. Raw, " "
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—1 Return tubular boiler, total 120 H. P., 2 pumps.
EMP—60; Last fiscal year output 40,000 tons.
Sales Agent, A. J. Reilly, Inland, Ala.

FRANKLIN COAL CO.
General Office, Birmingham. Ala.
Jefferson Mine; Slope, Jefferson Seam, 4 ft. thick.
MS—W. R. Evans, ... Lewisburg, Ala.
MF—Jos. Smith, " "
S of M—Hand.
EMP—25. Last fiscal year output, 8,454 tons. State report.

CALLOWAY COAL CO.
General Office, Memphis, Tenn.
PR—R. Galloway.....Memphis, Tenn.
TR—Cyrus Garnsey, Jr., " "
GM—Cyrus Garnsey, Jr., " "
EM—James Nicol, Jr., Carbon Hill, Ala.
SM—H. F. Peters, " "
Nos. 6 and 7 Mines, Slopes; Jagger Seam, 3 to 5 ft. thick; operate washery.
PO—Carbon Hill, Ala.; SP—Same; CTY Walker; RR—Frisco.
MS—Walter Hynd.. Carbon Hill, Ala.
S of H—Elec.
S of M—Comp. air.
PP—8 Boilers, total 720 H. P.
EMP—430.

No. 11 Mine; Slope; Jagger Seam, 3 to 5 ft. thick; operate washery.
PO—Carbon Hill, Ala.; SP—Same; CTY Walker.
S of H—Elec.
S of M—Hand.
PP—2 Boilers, total 250 H. P.
EMP—45.

Great Elk Mine, Shaft; Jagger Seam; 4 to 5 ft. thick; operate washery.
PO—Carbon Hill, Ala.; SP—Same; CTY Walker; RR—Frisco.
MS—James Nicol....Carbon Hill, Ala.
S of H—Mules and rope.
S of M—Comp. air mach.
PP—5 boilers, total 320 H. P.
EMP—95.

Garnsey Mine, Slope; Thompson-Cahaba Seams; 5 to 8 ft. thick; operate washery.
PO—Carnsey, Ala.; SP—Same; CTY—Bibb. RR—Birmingham.
MS—James Nicol.....Garnsey, Ala.
S of H—Mules and gasoline loco.
S of M—Hand.
PP—8 Boiler total 680 H. P.
EMP—258.

Alabama No. 3 Mine, Slope; Jagger Seam.
PO—Carbon Hill, Ala.; SP—Same; CTY Walker; RR—Frisco.
S of H—Mules.
S of M—Hand.
PP—2 Boilers, total 160 H. P., 250 volts, D. C.
EMP—60.

Mine No. 10, Slope; Jagger Seam.
PO—Carbon Hill, Ala.; SP—Same; CTY Walker; RR—Frisco.
S of H—Mules.
S of M—Hand.
PP—2 Boilers total 120 H. P.
EMP—40.

Chickasaw Mine, Shaft; Jagger Seam.
PO—Chickasaw, Ala.; SP Carbon Hill, Ala.; CTY Walker; RR Frisco.
S of H Mules.
S of M Comp. air mach.
PP—4 Boilers total 320 H. P.
EMP 40.

GAS LIGHT COAL & COKE CO.
Out of business.

GOLD CREEK COAL CO.
Out of business.

GOODWIN MINING & MERC. CO.
Out of business.

GULF STATE STEEL CO.
General Office, Birmingham, Ala.
Virginia Mine; Slope, Nickle Plate Seam, 50 to 54 in. thick.
PO—Bessemer, Ala.; SP—Same; CTY—Jefferson; RR—L. & N.
PR—James Baron....Birmingham, Ala.
TR A. R. Forsythe. " "
GS James E. Strong. " "
PA—B. F. Tyler, " "
MS—W. M. Mason, R. F. D., Bessemer, Ala.
S of H 2 gasoline motors and mules; track gauge 36 in.
S of M Hand.
PP—9 return tubular boilers, total 1,000 H. P., 2 compressors.
Sales Agent, H. Sanborn Smith, Birmingham, Ala.
Coke ovens 301 Bee Hive.

HELENA-CAHABA MINING CO.
General Office, Birmingham, Ala.
PO—Coalmont, Ala.; CTY—Shelby.
PR—Jas. Bonnyman, Birmingham, Ala.
No report

HENRY, JOHN, COAL CO.
John Henry Mine, Drift.
PO—Jasper, Ala.; SP—Same; CTY—Walker; RR. N. A.
PR—C. B. Stalnaker....Jasper, Ala.
GM—C. B. Stalnaker, " "
TR—H. B. Hayes, " "
GS—W. B. Simms " "
S of H—Mules.
S of M—Hand.
EMP—45.

HILL, W. C., COAL CO.
Yellow Creek Mine, Slope; Seam 18 to 30 in. thick.
PO—Fort Payne, Ala.; SP—Blanche, Ala.; CTY—DeKalb; RR—J. A. C.
MS—W. C. Hill .... Fort Payne, Ala.
S of H—Mules.
S of M—Hand.

HILLS CREEK MINING CO.
Hills Creek Mine; Slope, Woodstock Seam, 24 to 60 in. thick.
PO—Blockton, Ala.; SP—Same; CTY—Bibb; RR—L. & N., M. & O., Woodstock & Brocton Br.
PR—George W. Randall..Blocton, Ala.
PR—S. S. Allen, " "
GM—W. R. Young, " "
PA—W. R. Young, " "
GS—W. R. Ray, " "
MS—W. R. Ray, " "
MM—J. W. Lawrence, " "
SM—J. A. Harrison, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 250 H. P., 1 compressor, 2 pumps. Last fiscal year output, 52,000 tons.
Sales Agency, T. H. Benners & Co., Birmingham, Ala.

IMPERIAL COAL & COKE CO.
General Office, Birmingham, Ala.
Bradford Mine; Slope, Block Creek Seam, 30 in. thick; Operate Washery.
PO—Pinson, Ala; SP—Bradford, Ala.; CTY—Jefferson; RR—L. & N., Mineral Br.
PR—M. W. Bush, Box 287 Birmingham, Ala.
TR H. Hammond. " "
PA—H. E. Morrow, " "
MS—J. O. Colley.....Pinson, Ala.
CE—Pat Bradford " "
MM—T. H. Mitchell, " "
EE—T. H. Mitchell, " "
S of H 1 elec. loco. and rope.
S of M—Hand.
PP—3 return tubular boilers, total 280 H. P., gen. unit, 250 volts D. C., 7 pumps.
EMP—230. Coke ovens 106 Bee Hive. Output 500 tons per day.

INDIAN HEAD MILLS OF ALABAMA
Indian Head Mine; Drift; Mt. Carmel Seam, 36 to 60 in. thick.
PO—Cordova, Ala.; SP—Same; CTY—Walker; RR—Sou. Frisco.
PR—Geo. A. Draper, ..Boston, Mass.
TR—Harcourt Amory, " "
PA—Scott Maxwell, ...Cordova, Ala.
GS—Scott Maxwell, " "
MS—W. B. Earnest, " "
MM—R. Thisk, " "
S of H—Mules.

S of M—1 Comp. air mach.
PP—Power furnished from millplant.
EMP—10. Last fiscal year output 14,000 tons.
Mine coal for their own use.

JAGGER COAL CO.
General Office, Birmingham, Ala.
Jagger Mine; Slope, Jagg r Seam, 54 in. thick.
PO—Prospect, Ala.; SP—Jagg r, Ala.; RR—N. A.
PR—J. C.Patterson....Birmingham, Ala.
GM—E. P. Rosamond, " "
MS—W. W. Clark.....Prospect, Ala.
S of H—Mules.
S of M—6 comp. air mach.
PP—2 return tubular boilers, total 205P H. P., 1 compressor, 3 pumps.
EMP—65.

JAGGER CREEK FUEL CO.
Jagger Mine, Drift.
PO—Carbon Hill, Ala. SP—Same—CTY—Walker. RR—Frisco.
PR—Chas. J. Smith..Carbon Hill, Ala.
TR—Hunter M. Smith, " "
GM—Hunter M. Smith, " "
PA—Henley J. Smith, " "
MS—P. O. Goodwin, " "
EM—Motley & Dryer..Birmingham, Ala.
SM—E. W. Tutwiler..Carbon Hill, Ala.
S of H—2 Loco., mules and rope.
S of M—7 Comp. air mach.
PP—4 boilers, total 380 H.P. 1 comp.
EMP—101.

JENIFER FURNACE CO.
Out of business.

JONES COAL CO.
Borden Mine.
PO—Drifton, Ala.; CTY—Walker.
No report.

JORDAN COAL CO.
Sleepy Hollow Mine, Drift, Pratt Seam, 36 in. thick.
PO—Blossburg, Ala.; SP—Same; CTY—Jefferson; RR—Sou., Blossburg Div.
PR—P. R. Jordan.....Blossburg, Ala.
TR—P. R. Jordan, " "
GM—P. R. Jordan, " "
MS—P. R. Jordan, " "
EM—P. R. Jordan, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—85. Last fiscal year output 36,000 tons.

LANDRUM & THORNTON.
Landrum Mine, Drift; White Ash Seam 20 to 28 in. thick.
PO—Morris, Ala.; SP—Same; CTY—Jefferson; RR—L. & N.
GM—H. P. Thornton.....Morris, Ala
SM—H. P. Thornton, " "
MS—F. L. Landrum, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
Last fiscal year output 300 tons.

LEHIGH COAL CO.
Lehigh Mine, 3 Drifts, Black Creek Seam, 30 to 40 in. thick.
PO—Lehigh, Ala. SP—Same. CTY—Blount.
PR—Priestley Toulmin, ..Lehigh, Ala.
TR—Priestley Toulmin, " "
GM—Priestley Toulmin, " "
PA—Priestley Toulmin, " "
MS—Aug. Binner, " "
SM—D. O. McGhee, " "
S of H—Mules. Track gauge, 36 in.

LITTLE CAHABA COAL CO.
Piper Nos. 1 and 2 Mines.
PO—Piper, Ala.; SP—Same; CTY—Bibb; RR—Southern L. & N.
PR—J. R. Smith, Jr.....Piper, Ala.
TR—W. E. Henley, " "
PA—W. E. Henley, " "
MS—Jas. Wilcox. " "
SM—Geo. Atwood, " "
EM—Geo. T. Elliott, " "
MM—L. H. Perry, " "
S of M—Hand.

LINE CREEK COAL & COKE CO.
Line Creek Mine; Drift; Black Creek Seam; 24 to 60 in. thick.
PO—Sligo, Ala.; SP—Same; CTY—Etowah; RR—N. C. & St. L. Huntsville Br.
PR—H. H. Camp.....Sligo, Ala.
GM—Hope H. Camp, Jr., " "
GS—John Shaw Camp, " "
PA—John Shaw Samp, " "
EM—F. G. Lee.....Ivelee, Ala.
MS—Jess T. Lockart, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 pump.
EMP—20 to 35. Last fiscal year output, 23,000 tons.

McCORMACK & RAMSEY.
General Office, Birmingham, Ala.
New Castle Mine; Slope; Mary Lee Seam 32 to 84 in. thick. Operate washery.
PO—New Castle, Ala.; SP—Same; CTY—Jefferson; RR—L. & N.
PR—G.B.McCormack, Birmingham, Ala.
GM—C. M. McCormack,Birmingham, Ala.
PA—W. E. Hendrick..New Castle, Ala.
EM—A. S. Paw, " "
SM—W. E. Hendricks, " "
MM—J. M. Denton, " "
S of H—Mules, rope and 3 steam loco.; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers total 450 H. P., 3 air comp., 2 pumps
EMP—300. 374 Bee Hive coke ovens.
Last fiscal year output, 120,000.

McGOUGH, J. T.
Mine worked out.

MABEL MINING COMPANY.
Rio Dell Mine, Drift, "Black Creek" Seam, 24 to 36 in. thick.
PO—Warrior, Ala.; SP—El Vista, Ala., CTY—Jefferson; RR—L. & N., Linton Branch.
PR—F. M. Davidson....Warrior, Ala.
TR—F. M. Davidson, " "
GS—L. K. Moss, " "
PA—G. D. Etter, Jr. " "
MS—G. D. Etter, Jr., " "
SM—J. B. Huffstutter.
EM—A. H. Witt,...Birmingham, Ala.
S of H—Mules and 1 steam loco.; track gauge 36 in.
S of M—Hand.
EMP—60. Last fiscal year output, 26,950 tons. Sales agent, D. H. Brown & Co., Birmingham, Ala.

MARINE COAL COMPANY.
Atlas No. 3 Mine, Slope; American Seam; 30 in. thick.
PO—Oakman, Ala.; SP—Same; CTY—Walker; RR—Southern.
PR—W. L. Gravlee.....Oakman, Ala.
TR—W. L. Gravlee, " "
MS—C. C. Gravlee, " "
CE—Sumter Lee, Jr., Birmingham, Ala.
EM—Sumter Lee, Jr., " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler; 1 pump.
EMP—8. Last fiscal year output 1,200 tons. Sales agent, Van Hoose Coal Co., Birmingham. Ala.

MARYLAND COAL & COKE CO.
Now De Bardeleben Coal Co., Inc.

MILLER COAL CO.
Miller Mine; Drift; Mt. Carmel Seam, 34 to 36 in. thick.
PO—Cordova, Ala.; SP—Same; CTY—Walker; RR—Frisco, I. C.
PR—S. W. Miller.....Cordova, Ala.
TR—W. L. Miller, " "
GM—W. L. Miller, " "
PA—W. L. Miller, " "
MS—W. L. Miller, " "
CE—Hooper Collier, "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 Boiler, 1 pump.
EMP—25. Last fiscal year output 15,400 tons.
Sales Agency, J. B. Robinson & Co., Birmingham, Ala.

MONTEVALLO MINING CO.
Aldrich Mine, Slope; Montevallo Seam; 20 in. to 48 in. thick; operate washery.
PO—Aldrich, Ala.; SP—Same; CTY—Shelby; RR—Southern.
PR—W. S. Lovell, Birmingham, Ala.
TR—W. S. Lovell, " "
GM—W. S. Lovell, " "
PA—W. S. Lovell, " "
SEC—D. A. Thomas....Aldrich, Ala.
MS—A. H. Watson, " "
SM—George Yessick, " "
EM—J. L. Parry, " "
MM—Ed. Goodlue, " "
FE—Chas. Blanchard, " "
S of H—Mules, rope and 1 gasoline loco
S of M—2 Elec. and 3 comp. air machines.
PP—7 Water tube boilers total 925 H. P. 2 gen. units, 250 volts, D. C.; 1 air comp., and 1 pump.
EMP—134. Last fiscal year output 39,607 tons.

MONTEVALLO—SHELBY COAL CO.
Straven Mine, Slope, Montevallo Seam 32 to 48 in. thick.
PO—Straven, Ala.; SP—Same; CTY—Shelby; RR—Sou.
PR—F. B. Dunlap.....Straven, Ala.
TR—F. B. Dunlap, " "
MS—Wm. Murray, " "
PA—C. A. Killian, " "
SM—C. A. Killian, " "
MM—Robt. Coken, " "
S of H—Rope and steam.
S of M—Hand.
PP—2 Return tubular boilers, 1 pump.

MOUNTAIN VALLEY COAL & COKE CO.
See American Co-operative Coal Mining Co.

NEW CONNELLSVILLE COAL & COKE CO.
PO—Birmingham, Ala.
Not operated during 1914.

NEW FOUND CREEK COAL CO.
Eulamo Mine, Drift; Pratt Seam, 40 in. thick.
PO—Morris, Ala.; SP—Eulamo, Ala., CTY—Jefferson; RR—L. & N. Cone Creek Br.
PR—A. F. Morton, No. 10, Morris, Ala.
GM—A. F. Morton, " " "
MS—A. F. Morton, " " "
TR—J. C. Patterson, Birmingham, Ala.
PA—J. C. Arnold, No. 10, Morris, Ala.
SM—J. C. Arnold, " " "
S of H—Mules and gasoline loco., track gauge 36 in.
S of M—Hand.
Last fiscal year output, 54,006 tons.

NORTHPORT COAL COMPANY.
Mabel Mine, Shaft; Durrie Seam; 26 in. thick; operate washery.
PO—Northport, Ala.; Sp—Same; CTY—Tuscaloosa.
PR—Frank Rice.....Northport, Ala.
TR—Joe. A. Searcy, " "
GM—J. A. Quarles, " "
SM—J. A. Quarles, " "
MS—J. W. Nicholson, " "
S of H—Mules.

NORTH PRATT COAL CO.
Hillhouse Mine, Drift; Pratt Seam; 3 to 4 ft. thick.
PO—Adamsville, Ala. SP—Udora, Ala CTY—Jefferson. RR—L. & N. Praco Branch.
PR—Jas. Hillhouse, Birmingham, Ala.
TR—H. C. Hillhouse, Adamsville, Ala.
GM—J. D. Hillhouse, " "
MS—J. D. Hillhouse, " "
PA—Harry C. Hillhouse, " "
SM—W. L. Arnold, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—Purchase power.
EMP—50. Last fiscal year output 40,000 tons. Sales agent, T. H. Benners & Co., Birmingham, Ala.

OAKMAN MINING CO.
Leonora Mine; Drift; Corona Seam, 30 to 36 in. thick.
PO—Oakman, Ala.; SP—Same; CTY—Walker. RR—Southern.
PR—Geo. B. Hooper, .. Oakman, Ala.
GM—Geo. B. Hooper, " "
PA—Geo. B. Hooper, " "
MS—S. Robbins, " "
EM—H. Collier.....Oakman, Ala.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
Last fiscal year output, 13,752 tons.

O'REAR MINING CO.
O'Rear Mine, Drift; America and Pratt Seam 4 ft. thick.
PO—Drifton, Ala.; SP—Same; CTY—Walker; RR—Sou.
MS—G. V. O'Rear.....Drifton, Ala.
MS—R. M. Courington, " "
S of H—Mules.
S of M—Hand.
EMP—44. Last fiscal year output 26,001 tons.

PIERCE COAL & LUMBER CO.
General Office, Bridgeport, Ala.
Belmont Mine; Drift; Belmont Seam; 36 to 48 in. thick.
PO—Pierceton, Ala.; SP—Lime Rock, Ala.; CTY—Jackson. RR—Southern, Pierceton Br.
PR—Dr. F. D. Pierce..Bridgeport, Ala.
GM—Dr. F. D. Pierce, " "
PA—Dr. F. D. Pierce, " "
TR—R. W. Pierce, ... Buffalo, N. Y.
MS—P. Kilgore.....Pierceton, Ala.
CE—J. D. Austin, " "
MM—J. D. Austin, " "
SM—Earle Smith, " "
S of H—3 Steam loco. and mules. Track gauge 36 in.
S of M—2 Elec. and 2 comp. air mach. and hand.
PP—2 Return tubular boilers, total 300 H. P., gen. units, 250 volts D. C., 1 comp. and 1 pump.
EMP—30. Last fiscal year output, 5,000 tons.

PRATT CONSOLIDATED COAL CO.
General Office, Birmingham, Ala.
PR—G. B. McCormack, Birmingham Ala.
TR—J. A. Shook, " "
GM—H. E. McCormack, . " "
GS—E. B. Pennington and E. P. Rosamond, " "
PA—R. N. Magill, " "
EM—Erskine Ramsay, " "
MM—R. G. Williams, Quinton, "
EE—R. G. Williams, " "
Sales agent, K. A. Conville, Birmingham, Ala.

New Pratt Mine, Drift; "Pratt" Seam, 36 to 42 in. thick.
PO—Blossburg, Ala.; SP—Same, CTY—Jefferson. RR—Southern Ry.
S of H—Mules. Track gauge gauge 36 in
S of M—Hand.
EMP—140. Last fiscal year output 52,749 tons.

Toga and Jett Mines, Drifts; "Pratt' Seam, 36 to 42 in. thick.
PO—Adamsville, Ala. SP—Toga, Ala., and Erskine, Ala.; CTY—Jefferson. RR—Southern Ry., and L. & N.
MS—E. B. Pennington, Birmingham, Ala.
S of H—Mules. Track gauge 36 and 42 in.
S of M—Hand.
EMP—115. Last fiscal year output 54,266 tons.

Mineral Springs Mine, Drift; "Pratt" Seam, 36 to 42 in. thick.
PO—Watson, Ala.; SP — Mineral Springs, Ala. CTY—Jefferson. RR L. & N.
MS—E. B. Pennington, Birmingham, Ala.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—144. Last fiscal year output 83,172 tons.

Banner Mine, Shaft; "Big Seam," 84 in. thick. Operate washery.
PO—Littleton, Ala. SP—Banner, Ala. CTY—Jefferson. RR—L. & N.
S of H—Mules and 3 Electric Locomotives. Track gauge 42 in.
S of M—11 Electric Machines.
PP—6 boilers, total 900 H.P., 250 volts, D.C.; 1 Air Compressor.
EMP—275. Last fiscal year output 479,203 tons.

Arcadia Mine, Drift; "Pratt" Seam; 36 to 42 in. thick.
PO—Birmingham, Ala., R.F.D. No. 7; SP—Arcadia, Ala.; CTY—Jefferson. RR—L. & N.
MS—E. B. Pennington, Birmingham, Ala.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—106. Last fiscal year output 68,340 tons.

Crocker Mine, Drift; "Pratt" Seam; 36 to 42 in. thick.
PO—Morris, Ala., R.F.D. SP—Durant, Ala. CTY—Jefferson. RR—L.&N.
MS—E. B. Pennington, Birmingham, Ala.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—76. Last fiscal year output 39,211 tons.

Dora Nos. 8 and 10 Mines; Drift and Slope; "Big Seam" 48 to 84 in. thick. Operate washery.
PO—Dora, Ala.; SP—Same. CTY—Walker. RR—Frisco. R.R.
MS—C. S. Ramsay, ... Dora, Ala.
S of H—Mules and 2 Electric Locomotives. Track gauge 36 in.
S of M—Hand.
PP—6 boilers, total 740 H.P., 250 volts, D.C.
EMP—237. Coke ovens—60 Bee Hive.
Last fiscal year output 122,337 tons.

Clipper Mine, Slope; "Big Seam," 48 to 84 in. thick.
PO—Dora, Ala.; SP—Same, and Red Star, Ala.; CTY—Walker. RR—Southern Ry.
MS—C. S. Ramsay..... Dora, Ala.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—173. Last fiscal year output 108,549 tons.

Colta, Gamma and Wegra Mines, Slopes; "Big Seam," 60 to 96 in. thick. Operate washeries.
PO—Quinton, Ala.; SP—Colta, Ala., and Wegra, Ala. CTY—Walker. RR L. & N.
MS—J. D. Hallis. ....Quinton, Ala.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—5 Erie City Return tubular boilers, total 750 H.P.; 3 generating units, 500 volts, D.C.
EMP—206. Last fiscal year output 283,626 tons.

Maxine Mine, Slope and Drift, "Pratt" Seam; 36 to 48 in. thick. Operate Washery.
PO—Quinton, Ala.; SP—Maxine, Ala. CTY—Jefferson. RR—Southern Ry.
MS—C. B. McCormack, Quinton, Ala.
S of H—Mules and 1 Electric Locomotive. Track gauge 42 in.
S of M—Hand.
PP—2 boilers, total 300 H.P., 250 volts, D.C.
EMP—118. Last fiscal year output, 54,985 tons.

Gamble Mine, Slope; "Big Seam," 42 to 84 in. thick.
PO—Gamble Mines, Ala.; SP—Same CTY—Walker. RR—Northern Ala. Ry.
MS—J. A. Brakefield, Gamble Mines, Ala.
S of H—Mules. Track gauge 36 in.

S of M—Hand.
EMP—100. Last fiscal year output 49,498 tons.

Eldorado Mine, Slope, "Pratt" Seam; 36 to 42 in. thick.
PO—Watson, Ala. SP—Eldorado, Ala. CTY—Jefferson. RR—L. & N.
MS—G. B. McCormack, Jr., Watson, Al.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—114. Last fiscal year output 76,686 tons.

Praco Mine, Drift; "Big Seam," 84 in. thick.
PO—Quinton, Ala.; SP—Praco, Ala; CTY—Jefferson. RR—L. & N.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—87. Last fiscal year output, 67,442 tons.

QUEEN QUALITY COAL CO.
See American Co-operative Coal Mfg. Co.

RACCOON MINING COMPANY.
General Office, Gadsden, Ala.
Raccoon Mine, Drift; 40 in. thick. Operate washery.
PO—Altoona, Ala.; SP—Same. CTY—Etowah. RR—L. & N. Ry. Co.
PR—E. T. Schuler.....Gadsden, Ala.
TR—E. T. Schuler, " "
GM—E. T. Schuler, " "
MS—W. L. Smith,.... Altoona, Ala.
S of H—Elec. loca. Track gauge 40 in.
S of M—Hand and 2 Elec. mach.
PP—Boilers, total 125 H.P., 1 generating unit.
EMP—75. Last fiscal year output, 41,000 tons.

RATLIFF COAL CO.
Out of business.

RED EAGLE COAL COMPANY.
General Office, Birmingham, Ala.
Red Eagle Mine, Slope; Blocton No. 1 Seam 28 to 72 in. thick.
PO—Blocton, Ala.; SP—Weatherford, Ala. CTY—Bibb. RR—Mobile & Ohio, Blocton Branch.
PR—Hampton S. Smith, Birmingham, Ala.
GM—Hampton S. Smith, " "
TR—Hampton S. Smith, " "
PA—W. V. Hammond, " "
MS—T. D. Roddy, ...Blocton, Ala.
CE—Motley & Dryer, Birmingham, Ala.
SM—C. G. Tait, ... Blocton, Ala.
MM—Alvin Whitten, " "
S of H—Rope and mules; track gauge 42 in.
S of M—Hand.
PP—Boilers, total 300 H. P.
PP—Boilers, total 200 H.P.; 2 pumps.
EMP—125. Last fiscal year output 50,000 tons.
Sales Agent, J. B. Robinson & Co., Borminghom, Ala.

RED FEATHER COAL CO.
Red Feather Mine, Slope, Underwood Seam, 18 to 72 in. thick. Operate washery.
PO—Blocton, Ala.; SP—Red Feather. CTY—Bibb. RR—Mobile & Ohio, Blocton Branch.
PR—Alex. Bonnyman, Knoxville, Tenn.
TR—J. B. Campbell, ...Atlanta, Ga.
ASST TR—J. S. Morrow . Blocton, Ala.
GM—C. B. Wilburn.....Blocton, Ala.
PA—C. B. Wilburn, " "
MS—R. T. Boone, " "
SM—J. A. Holmes, " "
S of H—Mules & Rope. Track gauge 36 in.
S of M—Hand.
PP—4 Houston Stanwood, Gambell boilers, total, 500 H. P.; 2 Compressors.
EMP—250. Last fiscal year output 158,214 tons.

RED STAR COAL CO.
General Office, Birmingham, Ala.
Red Star and West Pratt Mines; Slope, Mary Lee Seam, 3½ and 4½ ft. thick.
PO—Dora, Ala.; SP—Same. CTY—Walker. RR—Frisco.
MS—C. P. Moore.....Dora, Ala.
MF—S. E. Ford, " "
S of M—Hand.
EMP—55. Last fiscal year output 58,343 tons. State report.

REPUBLIC IRON & STEEL CO. (SOUTHERN DISTRICT.)
General Office, Youngstown, O.
4 mines in Pennsylvania, 3 mines in Alabama.
PR—T. J. Bray.....Youngstown, O.
TR—H. L. Rownd, " "
GM—C. J. Fairbairn..Birmingham, Ala.
PA—R. L. Cross, " "
CE—M. J. Lide, " "
GS—F. G. Morris.....Sayreton Ala.
EM—(Chief) R. E. Butler " "
EE—(")W. J. Donahoo, " "
Palos Mine; Slope, Mary Lee Seam, 102 to 168 in. thick.
PO—Palos, Ala.; SP—Same; CTY—Jefferson; RR—Frisco.
MS—W. W. Kicker.....Palos, Ala.
MM—Tom Pinion, " "
S of H—Rope, mules and gravity plane; track gauge 36 in.
S of M—3 Elec. mach. and hand.
PP—4 Return tubular boilers, total 500 H. P., gen. unit, 440 volts A. C., 3 phase 60 cycles; 2 pumps.
EMP—212. Last fiscal year output, 167,672 tons.
Warrior No. 1 Mine; Slope and drift, Pratt Seam, 30 to 62 in. thick; Operate Washery.
PO—Republic, Ala.; SP—Same; CTY—Jefferson; RR—Sou.
MS—R. C. Wynn.....Republic, Ala.
MM—Tracy Armstrong. " "
S of H—11 Elec. loco., rope and mules; track gauge 36 in.
S of M—Hand.
PP—10 Return tubular boilers, total 1,250 H. P., 2 gen. units, 500 volts D. C., 5 pumps.
EMP—140; Coke ovens 100 Bee Hive. Last fiscal year output, 292,559 tons.
Sayreton Mine; Slope, Mary Lee Seam, 60 to 108 in. thick; Operate Washery.
PO—Sayreton, Ala.; SP—N. Birmingham, Ala.; CTY—Jefferson; RR—Thomas & Sayreton (Company owned).
MS—J. G. Meagher.....Sayreton, Ala.
MM—C. C. Peyton, " "
S of H—5 Elec. loco., mules and gravity plane; track gauge 42 in.
S of M—Hand.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units, 250 volts D. C., 550 volts A. C., 3 phase, 60 cycles.
EMP—370. Coke ovens, 1,000 Bee Hive, at Thomas, Ala. Last fiscal year output, 322,334 tons.

ROBBINS COAL CO.
Winston Mine; Drift; Brack Creek Seam, 20 to 38 inches thick.
PO—Lynn, Ala.; CTY—Winston RR—N. A.
PR—S. O. Robbins.....Lynn, Ala.
MS—S. O. Robbins, " "
TR—J. M. Romine....Narwood, Ala.
PA—J. M. Romine, " "
EMP—3.
S of H—Mules; track gauge 36 in.
Sales Agency, T. E. Bradford.

RODEN COAL COMPANY.
Marvel Mine, Slope; Clark Seam; 3 to 5 ft. thick. Operate washery.
PO—Marvel, Ala.; SP—Same CTY—Bibb. RR—L. & N. and Southern.
PR—B. F. Roden, ... Marvel, Ala.
GM—B. F. Roden, " "
PA—B. F. Roden, " "
TR—E. C. Kellam, " "
MS—W. D. McGinnis, " "
EM—T. B. Dryer, " "
MM—W. F. Cochrane, " "
EE—J. R. Liddle, " "
SM—G. E. Ellis, " "
S of H—Mule. Track gauge 42 in.
S of M—Hand.
PP—3 Wick's water tube boilers, total 900 H.P.; 2 generating units, 2,300 volts, A.C.; 3 phase; 60 cycle.
EMP—600. Last fiscal year output 268,000 tons. Sales agent, B. R. Smith, Birmingham, Ala.

SAMOSET COAL CO.
General Office, Burnwell Mines, Ala.
Samoset Mine, Slope; "Big Seam," 3 to 8 ft. thick.
PO—Samoset, Ala.; SP—Same. CTY—Walker. RR—Illinois Central and Frisco System.
PR—Harry S. Jenkins.
TR—F. A. Grider, Birmingham, Ala.
GM—H. E. Fleetwood, Burnwell, Ala.
GS—H. E. Fleetwood, " "
PA—H. E. Fleetwood, " "
MS—T. M. Byram, Samoset, "
CE—Motley & Dryer, Birmingham, Ala.
EM—Motley & Dryer, Birmingham, Ala.
MM—James Lawson, Samoset, "
SM—C. A. Butler, " "
S of H—Mules and tail rope. Track gauge 36 in.
S of M—Hand.
PP—3 return tubular boilers, total 240 H.P.
EMP—90. Last fiscal year output 89,055 tons. Sales agent, F. A. Grider.

SAYRE MINING & MFG. CO.
General Office, Birmingham, Ala.
Sayre Mine, Slope; Mary Lee Seam, 4 ft. thick.
PO—Sayre, Ala.; SP—Same. CTY—Jefferson. RR—L. &N., Praco Br.
PR—A. N. Cleaver, South Bethlehem Pa
TR—T. F. Randolph, Birmingham, Ala.
MS—F. T. Palmer, ... Sayre, Ala.
SM—W. H. Dennis, " "
S of H—2 Elec. loco. and endless rope. Track gauge 42 in.
S of M—Hand.
PP—7 Return tubular boilers, total 450 H.P.; 2 gen. units, 250 volts D.C.; 2 pumps.
EMP—250. Coke ovens, 150 Bee Hive.

SEABOARD COAL & COKE CO.
See Coal City Mining Co.

SEMI-CANNEL COAL CO.
Gas Light No. 5 Mine, Drift, Corona Seam 46 in. thick.
PO—Oakman, Ala; SP—Same. CTY—Walker. RR—Southern.
PR—R. C. Bush, ... Oakman, Ala.
TR—R. C. Bush, " "
GM—R. C. Bush, " "
PA—R. C. Bush, " "
MS—A. W. Jones, " "
EM—Paul Hayley " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—10. Last fiscal year output, 12,000 tons. Sales agent, T. H. Benners & Co., Birmingham, Ala.

SIBLEY BRICK CO.
General Office, Birmingham, Ala.
Langley Nos. 1 and 2 Mines, Drift. "Black Creek" Seam; 20 to 36 in. thick.
PO—Warrior, Ala.; SP—Langley, Ala.; CTY—Jefferson; RR—L. & N.
PR—Edward Hiller, Birmingham, Ala.
TR—Sidney Hiller, " "
GM—Thos. H. Simms....Warrior, Ala.
GS—W. C. Scott, " "
PA—W. C. Scott, " "
MS—Paul Bromiche, " "
CE—Motley & Dryer, Birmingham, Ala
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—65. Last fiscal year output 9,976 tons.

SILVER CREEK COAL CO.
Out of business.

SIPSEY COAL MINING CO.
Phillips Mine; Drift; Black Creek Seam, 26 to 30 in. thick; Operate Washery.
PO—R. F. D No. 1, Empire, Ala.; SP—Sipsey, Ala.; CTY—Walker; RR—Frisco; Sipsey Branch.
PR—J. E. Dilworth, ...Empire, Ala.
TR—J. E. Dilworth, " "
PA—S. H. Dilworth, " "
CE—Motley & Dryer, Birmingham, Ala.
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—Boiler, 50 H.P.
EMP—40. Output 125 tons per day.
Sales Agent, F. A. Grider, Empire, Ala.

SLIGO COAL MINING COMPANY.
Sligo Mine, Drift; 24 to 36 in. thick.
PO—Sligo, Ala.; SP—Same. CTY—Etowah. RR—N. C. & St. L.
MS—J. M. Smith, ... Sligo, Ala.
SM—J. M. Smith, " "
S of H—Mules.
S of M—Hand.
EMP—20. Last fiscal year output 8,000 tons. Sales agent, J. H. Horden, Gadsden, Ala.

SLOSS-SHEFFIELD STEEL & IRON CO.
General Office, Birmingham, Ala.
PR—J. C. Maben....New York, N. Y.
TR—E. L. Morris..Birmingham, Ala.
GM—J. C. Maben, Jr., " "
GS—J. G. Moore, " "
PA—W. B. Dowell, " "
EM—Frank M. Fletcher, " "
MM—R. J. Fulbright, " "
SM—W. B. Dowell, " "

New Found and Brookside No. 1 Mines, Drift and slope; Nickle Plate Seam 3 ft. thick. Operate washery
PO—Brookside, Ala.; SP—Same. CTY—Jefferson. RR Sou.
MS—H. J. Thomas, ..Brookside, Ala.
SM—Clifton Pool, " "
S of H—Rope and mules. Track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers 300 H.P.
EMP—175. Coke ovens, 185 Bee Hive type. Last fiscal year output 87,732 tons.

Crocker Hollow, Cardiff and Brazil Mines Drift; Nickle Plate, 3 ft. thick.
PO—Cardiff, Ala.; SP—Same. CTY—Jefferson. RR—Sou.
MS—H. J. Thomas, .. Brookside, Ala.
SM—Clifton Pool, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—375. Last fiscal year output 135,538 tons.

Flat Top Mine; Slope; Mary Lee Seam, 10 ft. thick. Operate Washery.
PO—Maben, Ala.; SP—Flat Top, Ala.; CTY—Jefferson. RR—Sou.
MS—J. W. Turner.....Maben, Ala.
SM—W. L. White, " "
S of H—1 steam loco., mules and rope. Track gauge 42 in.
S of M—2 Comp. air mach. and hand.
PP—2 Water tube, 7 return tubular boilers; total 1,200 H.P. 1 gen unit 110 D.C., 3 compressors and 1 pump.
EMP—500. Coke ovens, 200 Bee Hive. Last fiscal year output, 382,897 tons.

Bessie Mine, Slope; Mary Lee Seam, 7 ft. thick. Operate washery.
PO—Maben, Ala.; SP Bessie Mines, Ala. CTY—Jefferson. RR—Sou and Frisco.
MS—W. R. Thomas, ... Maben, Ala.
MS—J. N. Holt, " "
S of H—Mules and rope. Track gauge 42 in.
S of M—25 Comp. air mach.
PP—2 Water tube, 4 return tubular boilers, total 750 H.P., 4 air compressors and 1 pump.
EMP—350. Last fiscal year output 392,302 tons.

Ivy Mine, Slope; Mary Lee Seam, 6½ ft. thick Operate washery.
PO—Dora, Ala. SP—Same. CTY—Walker. RR—Frisco.
MS—L. M. Palmer.....Dora, Ala.
SM—Gordon Hagan. " "
S of H—1 Steam, 2 gasoline loco. and endless rope. Track gauge 42 in.
S of M—Hand.
PP—4 Return tubular boilers, 500 H. P..
EMP—400. Coke ovens, 200 Bee Hive. Las fiscal year output, 320,366 tons.

Drifton Mine; Drift; America Slope; 4 ft. thick.
PO—Drifton, Ala.; SP—Same. CTY—Walker. RR—Sou. Drifton Branch.
MS—Alex. Bremis, ... Drifton, Ala.
SM—W. A. Turner, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand. Last fiscal year output, 65,777 tons.

SOUTH BRILLIANT COAL CO.
Parker Mine; Drift; Elk River Seam, 30 in. thick.
PO—Brilliant, Ala.; SP—Same; CTY—Marion; RR—I. C.
PR—Geo. H. Parker, Cullman, Ala.
GS—O. S. Goodwin, " "
MS—J. D. Sumner, ...Brilliant, Ala.
EM—Sumter Lea, ..Birmingham, Ala.
SCO—Gibbo Bros., ...Brilliant, Ala.
S of H—Mules; track gauge 36 in.
S of M—3 Comp. air mach.
PP—1 Water tube boilers, 125 H.P., 1 compressor.
EMP—34. Output 100 tons a day.
Sales Agency, Bonnyman Coal Co., Birmingham, Ala. and Nauvoo, Ala.

SOUTH PRATT COAL CO.
See North Pratt Coal Co.

SOUTHERN CLAY MFG. CO.
General Office, Chattanooga, Tenn.
One Mine in Alabama, 1 mine in Tennessee.
Coaldale Mine, Drift; Black Creek Seam, 24 to 36 in. thick.
PO—Warrior, Ala.; SP—Coaldale, Ala.; CTY—Jefferson. RR—L. & N.
PR—W. M. Lasley, Chattanooga, Tenn.
TR—W. C. Brown, " "
PA—W. C. Brown, " "
GM—J. D. Harvey, " "
GS—O. S. Adams.....Warrior, Ala.
MS—W. R. Gibbs, " "
SM—W. A. Clouse, R.F.D, " "
S of H—Mules. Mine coal for their own use.

SOUTHERN COAL & COKE CO.
General Office, Maylene, Ala.
Glen Carbon Mine; Slope; Gholson Seam, 39 in. thick.
PO—Glen Carbon, Ala.; SP—Same; CTY—Shelby; RR—Sou.
GM—G. F. Peter.....Maylene, Ala.
PA—G. F. Peter. " "
EM—G. L. Chamberlain.
MS—Wm. Kellum....Glen Carbon, Ala.
SM—J. R. Hunter.....Gurnee, Ala.
S of H—Mules and rope.
S of M—Hand.
PP—5 Boilers, total 450 H. P.
EMP—200. Last fiscal year output 61,503 tons.

SOUTHERN IRON & STEEL CO.
See Gulf States Steel Co.

STANDARD COAL CO.
Standard Mine; Drift; Pratt and America 3 and 4 ft. thick.
PO—America, Ala.; SP—Parrish, Ala.; CTY—Walker; RR—Sou.
MS—C. O'Rear.....America, Ala.
S of M—Hand.
EMP—35. Last fiscal year output 17,480 tons. State report.

STITH COAL CO.
Bon Air Mine, Drift; America Seam, 30 to 50 in. thick. Operate washery.
PO—America, Ala.; SP—Lee Speer, Ala. CTY—Walker. RR—Sou., Ensley Branch.
PR—J. P. Dimmick, Montgomery, Ala.
TR—A. B. Aldridge ...America, Ala.
GM—A. B. Aldridge, " "
MS—A. B. Aldridge, " "
PA—E. P. Randle, " "
SM—E. P. Randle, " "
MM—Jas. House, " "
EM—C. F. Wheelock, Jr., Birmingham, Ala.
S of H—1 Gasoline loco. and mules. Track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler, 80 H. P. 3 pumps.
EMP—120. Last fiscal year output 98,004 tons.

STOUT'S MOUNTAIN COAL & COKE CO.
General office, Birmingham, Ala.
Stout's Mountain Mine, Drift; Jefferson & Black Creek Seam; 3 to 4 ft. thick.
PO—Stout's Mountain, Ala.; SP — Same. CTY—Cullman. RR—L. & N.
PR—Robert Stephens, Birmingham, Ala.
TR—Z. L. Nabers, " "
GM—S. T. Stephens, Stout's Mountain, Ala.
MS—S. T. Stephens, " " "
PA—J. A. Maddow, " " "
SM—J. A. Maddow, " " "
EM—A. J. Turner..Birmingham, Ala.
S of H—Mules and 1 steam Locomotive. Track gauge, 36 in.
S of M—Hand.
EMP—95. Last fiscal year output 65,000 tons. Sales agent, Z. L. Nabers, Birmingham, Ala.

STUDDARD COAL CO.
Studdard Mine, Slope; Jaggers Seam, 42 in. to 60 in. thick.
PO—Kansas, Ala. SP—Carbon Hill, Ala. CTY—Walker.
PR—J. D. Studdard, .. Kansas, Ala.
MS—J. D. Studdard, " "
TR—A. Studdard, " "
S of H—Mules. Track gauge 40 in.
S of M—Hand.
PP—Boilers, total 40 H.P.
EMP—18. Last fiscal year output 8,500 tons.

SUPERIOR COAL & COKE CO.
Superior Mine; Slope; Helena Seam.
PO—Birmingham, Ala.; RR—Sou.
GM—A. J. Gilmore, Birmingham, Ala.
PA—A. J. Gilmore, " "
EM—Grant L. Pow, " "
MS—John Lang.
SM—George Lang.
S of H—Rope.
S of M—Hand.
PP—2 Boilers, total 1,220 H. P.
EMP—48.

TENNESSEE COAL, IRON & RAILROAD COMPANY.
General Office..... Birmingham, Ala.
20 Mines in Alabama and 1 mine in Tennessee.
PR—Geo. G. Crawford, Birmingham, Ala.
TR—L. T. Beecher, " "
Mine Mgr.—Edwin Ball, " "
PA—Geo. H. Gray, " "
SM—Geo. H. Gray, " "
CE—Robert Hamilton, " "
EM—C. G. Owen, " "
MM—Edwin Ball, " "
CE—A. F. Elliott. .... Ensley, Ala.
GM of Sales—F. A. Burr, and J. W. Whatley, Birmingham, Ala.

Pratt No. 1, 2 and 10 Mines; Shaft and Slope.
"Pratt" Seam, 45 to 46 in. thick. Operate washery.
PO—Pratt City, Ala. SP—Shafton and Ridgefield, Ala. CTY— Jefferson. RR—Birmingham Southern.
MS—P. J. Rogers, .. Pratt City, Ala.
S of H—Electric Locomotive and rope.
S of M—Hand and Electric Machines.
PP—Boilers, gen. units, 500 volts D. C.
EMP—353. Coke ovens, 228 Bee Hive. Last fiscal year output, 149,652 tons.

Pratt No. 3 Mine; Slope; Pratt Seam, 48 in. thick. Operate washery.
PO—Ensley, Ala. SP—Same. CTY—Jefferson. RR—Birmingham Sou.
MS—P. J. Rogers, .. Pratt City, Ala.
S of H—Elec. loco. and rope.
S of M—Elec. mach. and hand.
PP—6,600 volts A.C. Power from Central Station.
EMP—265. Coke ovens, 120 Bee Hive. Last fiscal year output, 333,272 tons.

Pratt No. 4 Mine; Slope, Pratt Seam, 48 in. thick. Operate washery.
PO—Ensley, Ala.; SP—Same. CTY — Jefferson.
MS—J. R. Brown, ... Ensley, Ala.
S of H—Elec. loco. and rope.
S of M—Elec. mach. and hand.
PP—6,600 A.C. from Central station.
EMP—292. Coke ovens, 102 Bee Hive. Last fiscal year output, 161,147 tons.

Pratt No. 5 and 8; Slope; Pratt Seam, 48 and 49 in. thick. Operate washery.
PO—Wylam, Ala.; SP—Same and Brynton, Ala. RR—Birmingham Sou.
MS—J. R. Brown.....Ensley, Ala.
S of H—Elec. loco. and rope.
S of M—Elec and hand.
PP—6,600 volts A.C. From Central station.
EMP—660. Coke ovens, 50 Bee Hive. Last fiscal year output, 536,628 tons.

Pratt No. 7 and 14, Slope and drift; Pratt Seam, 48 in. thick.
PO—Pratt City, Ala.; SP—Laketon and Thompson, Ala. CTY—Jefferson. RR—Birmingham Sou.
MS—P. J. Rogers, ... Pratt City, Ala
S of H—Elec. loco., mules and rope.
S of M—Hand.
PP—500 volts D.C.
EMP—206. Last fiscal year output, 183,000 tons.

Docena Mine, Shaft; Pratt Seam, 42 in. thick.
PO—Adamsville, Ala., R. D. No. 4 SP Docena, Ala. CTY—Jefferson. RR—Birmingham Sou.
MS—W. H. Stirling, Adamsville, Ala.
S of H—Elec.
S of M—Elec. and hand.
PP—250 volts D. C.
EMP—383. Last fiscal year output, 365,769 tons.

Edgewater Mine; Shaft; Pratt Seam, 52 in. thick.
PO—Wylam, Ala.; SP—Edgewater, Ala. CTY—Jefferson. RR—Birmingham Sou.
MS—J. M. McHugh, ... Wylam, Ala.
S of H—Elec.
S of M—Elec and hand.
PP—250 volts D.C.
EMP—806. Last fiscal year output, 715,937 tons.

Blue Creek Nos. 3 and 4; Slope; Blue Creek Seam, 80 to 82 in. thick. Operate washery.
PO—Johns, Ala. SP—Same and Sumter, Ala. CTY—Jefferson. RR—L. & N.
MS—H. M. Byars, ... Johns, Ala.
S of H—Mules and rope.
S of M—Hand.
PP—250 and 500 volts D.C.
EMP—380. Coke ovens, 291 Bee Hive. Last fiscal year output, 385,605 tons.

Blue Creek Nos. 5 and 6; Slope; Blue Creek Seam, 84 in. thick.
PO—Johns, Ala.; SP—Adger and Apache, Ala. CTY—Jefferson. RR—L. & N.
MS—H. M. Byars, ... Johns, Ala.
S of H—Mules and rope.
S of M—Hand.

Blocton Nos. 2, 3, 7 and 8; Slope; Thompson Seam, 66 to 70 in. thick.
PO—Blocton, Ala.; SP—Same. CTY—Bibb. RR—L. & N., W. & B.; A. G. S. Sou., M & O.
MS—James Stewart, .. Blocton, Ala.
S of H—Mules and rope.
S of M—Hand.
PP—2,300 volts A.C.
EMP—407. Coke ovens, 467 Bee Hive. Last fiscal year output, 355,829 ons.

Blossburg "A" "B" and "E"; Drift; Pratt Seam, 42 in. thick. Operate washers.
PO—Blossburg, Ala.; SP—Same. CTY—Jefferson. RR—Sou.
MS—Harry McCrarie....Blossburg, Ala.
S of H—Mules.
S of M—Hand.
EMP—311. Last fiscal year output, 210,000 tons.

THOMASSON, J. M.
Drift Mine. Seam 18 to 32 in. thick.
PO—Natural Bridge, Ala.; SP—Glen Mary, Ala.; CTY—Winston, Ala. RR—N. A.
GM—J. M. Thomasson, Natural Bridge, Ala.
PA—J. M. Thomasson, " "
PA—J. M. Thomasson, " "
S of H—1 Gasoline loco.
S of M—Hand.
EMP—17. Last fiscal year output 17.

TUNE COAL CO.
Pocahontas No. 2 Mine; Slope; Jagger Seam, 3 ft. 10 in. thick.
PO—Pocahontas, Ala.; SP—Same; CTY —Walker; RR—Frisco.
MS—L. A. Tune....Pocahontas, Ala.
S of M—Hand.
EMP—20. Last fiscal year output 9,000 tons. State report.

TUSCALOOSA MINING CO.
Tuscaloosa Mine; Drift; America Seam.
PO—Oakman, Ala.; SP—Same; CTY—Walker; RR—Sou.
GM—George B. Hooper..Oakman, Ala.
PA—George B. Hooper, " "
EM—Hooper Collier, " "
MS—S. A. Robbins, " "
S of H—Mules.
S of M—Hand.
EMP—30.

TUSCALOOSA EXPORT COAL CO.
General Office, Birmingham, Ala.
Gilmore Mine, Drift, Brookwood Seam, 4 ft. 8 in. to 5 ft. 4 in. thick. Operate washery.
PO—Cottondale, Ala., R.F.D. No; 2. SP—Shiras. CTY—Tuscaloosa. RR—L. & N., Warrior River Branch.
PR—W. J. Gilmore, Birmingham, Ala.
TR—M. R. Gilmore, " "
PA—R. M. Gilmore, " "
GM—A. J. Gilmore, " "
MS—A. J. Gilmore, " "
SB—R. M. Gilmore, " "
SM—J. D. Glenn, Cottondale, Ala., R.F.D. No. 2.
EM—J. D. Walker, East Lake, Ala.
S of H—Mules and Steam. Track gauge 40 in.
S of M—Hand.
EMP—96. Last fiscal year output, 100,024 tons.

VULCAN SUPPLY CO.
South Pike Mine, 2 Slopes, Eureka and Marion Seams, 36 to 54 in thick.
PO—Coal City, Ala.; SP—Same; CTY—St. Clair; RR—S. A. L.
PR—H. N. Van Devander, Cedartown, Ga.
TR—H. N. Van Devander, " "
EM—H. N. Van Devander, " "
GM—C. R. Fay.....Coal City, Ala.
PA—C. R. Fay, " "
S of H—Rope; track gauge 36 in.
S of M—Hand.
EMP—40. Last fiscal year output, 17,381 tons.

WADSWORTH-CAHABA COAL CO.
Wadsworth Mine; Slope, Wadsworth Seam, 48 in. thick.
PO—Birmingham, Ala.; SP—Falliston, Ala.; RR—L. & N., Birmingham Mineral Branch.
PR—W. C. Beck, Birmingham, Ala.
TR—L. E. Patton, " "
S of H—Steam rope hoist.
S of M—1 Comp. air mach.
PP—1 Gen. unit, 1 compressor and 1 pump.
Note—Operating a mine formerly leased by the Wadsworth Red Ash Coal Co.

WADSWORTH RED ASH COAL CO.
See Wadsworh-Cahaba Coal Co.

WALKER COUNTY COAL CO.
General Office, Birmingham, Ala.
Lubuco Mine, Drift, Pratt Seam.
PO—Quinton, Ala.; SP—Same. CTY—Jefferson. RR—Frisco.
PR—W. J. Gilmore, Birmingham, Ala.
TR—M. R. Gilmore, " "
GM—A. J. Gilmore, " "
GS—A. J. Gilmore, " "
PA—B. S. Tutwiler,.. Quinton, Ala.
EM—A. S. Pin, ... Ensley, "
S of H—Mules
S of M—Hand.
PP—Boiler, 50 H.P.
EMP—75.

WARALA COAL COMPANY.
General Office, Reading, Pa.
Borden Mine, Drift, America Seam, 2 ft. 6 in. to 4 ft. 6 in. thick.
PO—Drifton, Ala.; SP—Same. CTY—Walker. RR—Southern, Enslee Branch.
PR—Frank J. Boyer,.. Reading, Pa.
TR—Geo. Speer, ... Bangor, "
GM—J. H. Boyer, ... Drifton, Ala.
SM—Geo. R. Browne, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—60.
—Note—Mine not operated during past year on account of business depression.

WARRIOR BLACK CREEK COAL CO.
Nyota Nos. 1, 2 and 3 Mines; Drift; "Black Creek" Seam, 28 to 40 in. thick. Operate washery.
PO—Warrior, Ala.; SP—El Vista, Ala.; CTY—Jefferson. RR—L. & N., Linton Branch.
PR—G. R. McCormack, Birmng'hm, Ala
TR—C. L. Moss, ... Warrior, "
CM—C. L. Moss, " "
PA—C. L. Moss, " "
MS—Fred. Moss, " "
SCO—Nyota Store, " "
Buyer, C. S. Fletcher, " "
S of H—Mules and 2 steam locomotives. Track gauge 36 in.
S of M—Hand.
EMP—150. Last fiscal year output, 62,000 tons. Sales agent, D. H. Brown & Co., Birmingham, Ala.

WARRIOR PRATT COAL CO.
General Office, Birmingham, Ala.
Porter Mine, Slope, Mary Lee Seam.
PO—Porter, Ala.; SP—Same; CTY—Jefferson; RR—Sou.
PR—Daniel Pierson, Jr., Birmingham, Ala.
TR—Harold R. Sanson, " "
GM—Harold R. Sanson, " "
PA—Geo. C. Walter, " "
EM—A. H. Witt, " "
MS—Dan McDevitt.....Porer, Ala
SB—E. S. Watson, " "
S of H—Rope and mules.
S of M—Hand and 15 comp. air mach.
PP—4 Atlas boilers, total 600 H. P., 2 comp. and 4 pumps.

WARRIOR RIVER COAL CO.
Warrior River Mines, 1 Slope, 2 Drifts; Jagger Seam, 4 ft. 8 in. to 5½ ft. thick; operate washery.
PO—Carbon Hill, Ala.; SP Same; CTY—Walker; RR—Frisco, Main Line.
PR—F. D. Lewis.....Bessemer, Ala.
TR—W. E. Bonham..Carbon Hill, Ala.
GM—W. E. Bonham, " "
PA—W. E. Bonham, " "
MS—W. E. Bonham, " "
MM—J. L. Dutton, " "
SM—W. B. Morris and C. Hill, " "
CE—A. H. Witt,....Birmingham, Ala.
S of H—1 Comp. air loco. and mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 1,250 H. P., 1 comp. 2 pumps delivering water to surface.
EMP—150. Last fiscal year output 85,000 tons.
Sales Agency, Bonnyman, Normon Coal Co., Birmingham, Ala.

WEST CORONA COAL CO.
Leased to Chabert Coal Co.

WIDOWS CREEK COAL CO.
Montague Mine.
PO—Bridgeport, Ala.; SP—Same; CTY—Jackson.
No report.

WIGAN COAL CO.
Sold to Southern Sewer Pipe Co.

WOODWARD IRON CO.
General Office, Woodward, Ala.
PR—Jas. H. Woodward, Birmingham, Ala.
GS—B. E. Purser.....Dolomite, Ala.
ASST TO VPR—J. J. Shannon, Woodward, Ala.
TR—D. E. Wilson, " "
PA—Herbert E. Smith, " "
MM—J. D. Goboury, " "
EE—E. P. Winters, " "
SM—J. H. Leonard, " "
EM—A. F. Harper.....Mulga, "
Dolomite Nos. 1 and 2 Mines; Slope, Pratt Seam, 4½ ft. thick.
PO—Dolomite, Ala.; SP—Same; CTY—Jefferson; RR—A. B. & A.
MS—B. E. Purser.....Dolomite, Ala.
S of H—Elec. locos.
S of M—Hand.
EMP—720. Last fiscal year output 623,565 tons.

Mulga No. 1 Mine; Shaft; Pratt Seam 3½ ft. thick.
PO—Mulga, Ala.; SP—Same; CTY—Jefferson; RR—A. B. & A.
MS—I. C. Dalrymple....Mulga, Ala.
S of H—Elec. locos.
S of M—Mach.
EMP—395. Last fiscal year output 255,606 tons.

YARBROUGH COAL CO.
Carbon Hill No. 1 Mine; Slope, Jagger Seam 4 ft. thick.
PO—Carbon Hill, Ala.; SP—Same; CTY—Walker; RR—Sou.
MS—George W. Shaw, Carbon Hill, Ala.
S of M—Hand.
EMP—10. Last fiscal year output 1553 tons. State report.

YOLANDE COAL & COKE CO.
General Office, Birmingham, Ala.
Yolanda Mine.
PO—Yolande, Ala.; SP—Same; CTY—Tuscaloosa; RR—L. & N.
PR—J. B. McClary, Birmingham, Ala.
GM—J. B. McClary, " "
PA—J. B. McClary, " "
TR—E. J. Rowe, " "
MS—D. E. Morrow.....Yolande, Ala.
EM—D. E. Morrow, " "
SM—T. W. Moore, " "
EM—400. Coke ovens, 100 Bee Hive. Last fiscal year output, 158,038 tons.
Sales agent, E. J. Rowe, Birmingham, Ala.

ARKANSAS

For List of Abbreviations See Page 498.

ARKANSAS VALLEY COAL CO.
Porter Mine, Slope, Hartshorne Seam, 36 to 42 in. thick.
PO—Hacket, Ark.; SP—Same; CTY—Sebastian; RR—M. V.
GM—Wm. C. Caudle.....Hackett, Ark.
PA—Wm. C. Caudle, " "
MS—Wm. C. Caudle, " "
CE—Wm. C. Caudle, " "
EM—A. D. Porter, " "
S of H—Mules and rope.
S of M—Hand.
PP—1 Nagle return tubular boiler, 60 H. P.; 1 gen. unit.
EMP—45. Last fiscal year output, 10,000 tons. Sales Agentcy, Wm. C. Caudle, Hackett, Ark.

BUNCH, T. H., COAL COMPANY, THE,
Out of business.

CENTRAL ANTHRACITE COAL CO.
Central Mine.
PO—Clarksville, Ark.; No report.

CENTRAL COAL & COKE CO.
General Office, Kansas City, Mo. 7 mines in Arkansas, 9 in Kansas, 3 in Missouri, 3 in Wyoming, and 2 in Oklahoma.
PR—Charles S. Keith, Kansas Cty, Mo.
VP—Harry N. Taylor....Chicago, Ill.
PA—Thos. Mackie....Kansas City, Mo.
SM—Thos. Mackie, " " "

No. 26 Mine, Shaft, Hart Seam.
PO—Huntington, Ark. SP—Bonanza, Ark. CTY—Sebastian. RR—Frisco.
MS—D. H. Cadmus....Huntington, Ark.
S of H—Elec. loco.
S of M—Elec. mach.
PP—6 boilers, 3 gen. units, 2 100 K. W. 1 225 K.W., 250 volts, D.C.
Nos. 3 and 5 Mines, Shaft and drift; Hart Seam.
PO—Huntington, Ark. SP—Same. CTY Sebastian. RR—Frisco.
MS—D. H. Cadmus....Huntington, Ark.
S of H—Rope and elec. loco.
S of M—Hand.
PP—8 boilers.
EMP—560..

Nos. 2 and 6 Mines; Shaft. Hart Seam.
PO—Huntington, Ark. SP—Same CTY—Sebastian. RR—Frisco.
MS—D. H. Cadmus....Huntington, Ark.
S of H—Mules.
S of M—Hand and mach.
PP—4 boilers.
EMP—192.

Midvalley No. 7 and 4 Mines; Slope. Hart Seam.
PO—Huntington, Ark. SP—Hartford, Ark.; CTY—Sebastian. RR—C.R. I. & P.
MS—D. H. Cadmus....Huntington, Ark.
S of H—Mules and rope.
S of M—Mach.
PP—4 boilers.

CLARK & McWILLIAMS.
PO—Spadra, Ark. No report.

CORONADO COAL COMPANY.
General Office, Fort Smith, Ark.
Coronado No. 1, Shaft; Lower Hartshorne Seam; operate washery.
PO—Midland, Ark.; SP—Same; CTY—Sebastian; RR—Frisco.
PR—F. Bache.....Ft. Smith, Ark.
VP—C. H. Finley, " "
TR—E. D. Joyner, " "
GS—J. S. Cameron ....Midland, Ark.
S of H—Mules and rope.
S of M—Hand.
Sales Agent, McAlester Fuel Co., McAlester, Okla.

DALLAS COAL CO.
Dallas Nos. 4 and 8 Mines, Shaft and 5 drifts, Hartshorne, Seam 34 to 48 in. thick.
PO—Huntington, Ark.; SP—Burnea, Ark.; CTY—Sebastian; RR—St. Louis & San Francisco, Mansfield Br.
PR—J. E. Finney.....Huntington, Ark.
TR—L. E. Turner, " "
GM—L. E. Turner, " "
PA—L. E. Turner, " "
MS—A. Bair.....Huntington, Ark.
S of H—Mules, rope and 1 steam loco., track gauge 28 in.
S of M—Hand.
PP—1 Water tube boiler, total 100 H. P., 1 pump.

DODSON, GEO. E. COAL CO.
Nos. 1 and 2 Mine, Denning Semi Anth. Smokeless Seam, 36 to 48 in. thick.
PO—Alix, Ark; SP— Denning Yards, Ark.; CTY—Franklin; RR—St. L. I. M. & S.
TR—Geo. E. Dodson.....Alix, Ark.
GM—Geo. E. Dodson, " "
PA—Geo. E. Dodson, " "
MS—Geo. E. Dodson, " "
MM—Arthur McDonald, " "
SCO—Geo. E. Dodson's Genl. Mdse, Alix, Ark.
S of H—1 Comp. air loco., rope and mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubuar boilers, total 280 H. P., 1 compressor, 2 pumps.
EMP—130 to 140.
Last fiscal year output 42, 139 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

DODSON-MELTON COAL CO.
See Geo. E. Dodson Coal Co.

EUREKA ANTHRACITE COAL CO.
See Spadra Creek Coal Co., Clarksville, Ark.

EUREKA MINING CO.
Eureka Mine; Shaft, Spadra Seam, 36 to 48 in. thick.
PO—Clarksville, Ark.; SP—Spadra, Ark.; CTY—Johnson; RR—Mo. Pac.
PR—H. L. Mardis....Clarksville, Ark.
TR—E. J. Mardis, " "
GM—E. J. Mardis, " "
PA—E. J. Mardis, " "
MS—E. J. Mardis, " "
SCO—Address the Company
S of H—Mules; track gauge 34 in.
S of M—Hand.
PP—2 Return tubular boilers, total 180 H. P., 1 pump.
EMP—100. Last fiscal year output, 14,000 tone. Sales Agency, Spadra Clarksville Coal Co., Spadra, Ark.

FRANKLIN COAL CO.
See McKinney Coal Co., Alix, Ark.

GREENWOOD SMOKELESS COAL CO.
Gunthe No. 2 Mine, Slope; 5 to 8 ft. thick.
PO—Greenwood, Ark.; SP—Gunthe, Ark. CTY—Sebastian; RR—Midland Val.
PR—A. P. Gunthe....Greenwood, Ark.
GM—A. P. Gunthe, " "
TR—A. N. Sicaid, " "
MS—F. J. McQuire, " "
PA—Frank Gunthe, " "
CE—H. O. Lewis, " "
EM—H. O. Lewis, " "
MM—Wm. Jones, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Boilers; 1 air comp.; 3 pumps.
EMP—185. Last fiscal year output 120 tons.
Sales Agent, Star Coal Co., Kansas City, Mo.

HARPER COAL & COKE CO.
Harper Mine, Slope, Hartshorne Seam 40 to 44 in. thick.
PO—Bates, Ark.; SP—Same; CTY—Scott; RR—K. C. So.
PR—I. R. Packard.....Bates, Ark.
GM—I. R. Packard, " "
PA—I. R. Packard, " "
MS—I. R. Packard, " "
TR—C. P. Wilson....Fort Smith, Ark.
SCO—I. R. Packard Mdse. Co., buyer I. R. Packard, Bates, Ark
S of H—Rope; track gauge 36 in.
S of M—Hand.
PP—2 Water tube boilers, total 180 H. P., 1 gen. unit, 2 pumps.
EMP—80. Last fiscal year output 200 tons per day.

HARTFORD COAL CO.
General Office, Fort Smith, Ark.
No. 1 Mine; Slope; Hartshorne Seam.
PO—Midland, Ark.; SP—Same; CTY—Sebastian; RR—Midland Valley.
GM—F. Bache .....Fort Smith, Ark.
MS—H. P. Sweeney.....Midland, Ark.
S of H—Mules and rope.
S of M—Hand.
PP—Boiler 125 H. P.
EMP—75.

HIAWATHA SMOKELESS COAL CO.
Coaldale Mine; Slope.
PO—Greenwood, Ark.; SP—Same; CTY—Sebastian; RR—Arkansas & Western.
GM—R. A. Young....Greenwood, Ark.
PA—R. A. Young, " "
MS—R. A. Young, " "
S of H—Mules and rope.
S of M—Hand.
PP—2 Boilers total 250 H. P.
EMP—60.

McKINNEY COAL CO.
McKinney Mine, Shaft, Seam 36 to 44 in. thick.
PO—Montana, Ark.; SP—Same; CTY—Johnson; RR—S. L. I. M. & S.
GM—D. A. McKinney.....Alix, Ark.
PA—D. A. McKinney, " "
MS—D. A. McKinney, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Houston Stanwood & Gamble return tubular boilers, 2 pumps;
EMP—40. Last fiscal year output 20,000 tons. Sales agent, McAlester Fuel Co., McAlester, Okla.

McWILLIAMS, WARD & CO.
Shaft, "Semi Anthracite" Seam, 3 to 3½ ft. thick.
PO—Spadra, Ark. SP—Same. CTY—Johnson. RR—I. M. & S.
GM—N. R. Clark .....Spadra, Ark.
MS—N. R. Clark ..... " "
PA—H. .G Clark ..... " "
SM—G. Clark ..... " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—1 water tube boiler, 1 pump.
EMP—80. Last fiscal year outfut 26,000 tons.
Sales agent, H. G. Clark.

MAMA COAL CO.
Mama Mines; Slope; Seam 5 ft. 4 in. thick.
PO—Jenny Lind, Ark.; SP—Same; CTY—Sebastian; RR—Iron Mountain.
TR—Lester Henson, Jenny Lind, Ark.
GS—Jos. Mama, " " "
MS—Jos. Mama, " " "
CE—Max Richard, " " "
EM—Dave Messer, " " "
S of H—1 Steam loco. and rope; track gauge 36 in.
S of M—Hand.
PP—1 Boiler.
EMP—20. Last fiscal year output 8,000 tons.

MAMMOTH VEIN COAL CO.
General Office, Fort Smith, Ark.
Mammoth Vein Nos. 1 and 6 Mines Slope and Shaft; Lower Hartshorne Seam; 7 to 10 ft. thick.
PO—Midland, Ark.; SP—Same; CTY—Sebastian; RR—Midland Valley and Rock Island.
PR—F. Bache.....Ft. Smith, Ark.
VP—C. H. Finley " "
TR—E. P. Jayner, " "
GS—J. S. Cameron.....Midland, Ark.
S of H—Mules and rope.
S of M—Hand and 2 comp. air mach.
Sales Agent, McAlester Fuel Co., McAlester, Okla.

MAYER COAL CO.
1 Mine in Arkansas, 10 in Kansas. Fidelity No. 10 Mine, Slope, Semi-Anth-
PO—Greenwood, Ark.; SP—Same; CTY—Sebastian; RR—Midland Valley.
PR—John Mayer.....Kansas City, Mo.
GM—John Mayer. " " "
TR—K. S. Mayer....Kansas City, Mo.
PA—R. I. McGregor, " " "
GS—Joseph Humble, West Mineral, Kan.
EM—R. E. Welch, " " "
MS—John Humble.....Greenwood, Ark.
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—4 Return tubular boilers, total 400 H. P., 2 Air comp., 4 pumps.
EMP—150. Last fiscal year output 12,000 tons.
Sales Agent, R. I. McGregor, Kansas City, Mo.

MERCK & SPAINLOUR.
Star Mine.
PO—Paris, Ark. No report.

PACKARD CONSOLIDATED COAL CO.
Packard Mine; Slope; Bates Seam, 6 ft. thick.
PO—Bates, Ark.; SP—Same; CTY—Scott; RR—K. S., Sou.
MS—I. R. Packard.....Bates, Ark.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—Boiler 60 H. P.
EMP—45. Output 100 tons daily.

PARIS COAL CO.
Pendleton Mine; Shaft; Paris Seam, 30 to 32 in. thick.
PO—Paris, Ark; SP—Same; CTY—Logan; RR—Ark. Central.
PR—Martin Theurer, Fort Smith, Ark.
GM—Anthony Hall.....Paris, Ark.
PA—Anthony Hall, " "
MS—Anthony Hall, " "
S of H—Mules; track gauge 36 in.
S of M—6 Comp. air mach and hand.
PP—2 Water tube boilers, total 120 H. P., 1 comp. and 1 pump.
When fully developed will produce 500 tons per day.
Did not operate during the past year.

PENNSYLVANIA MNG. CO.
General Office, Scranton, Pa.
Fernwood Mine, Shaft, Spadra Seam 36 in. t hick.
PO—Clarksville, Ark. SP—Same. CTY Johnson. RR—M. P., St. L. I. M. & S.
PR—James K. Gearhart..Scranton, Pa.
TR—W. H. Gearhart .. " "
GM—Fremont Stokes...Clarksville, Ark.
MS—Fremont Stokes ... " "
EM—R. M. Eyster..... " "
PA—B. H. Pennington..Clarksville, Ark.
S of H—Mules. Track gauge 42 in.
S of M—3 elec. machines and hand.
PP—2 return tubular boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—250. Last fiscal year output 60,000 tons.
Sales agent, McAlester Fuel Co., McAlester, Okla.

PHOENIX COAL & MINING CO
No. 1 Mine: Slope and strip; Hartshorne Seam, 36 to 84 in. thick.
PO—Huntington, Ark.; SP—Arksol, Ark.; CTY—Sebastian; RR—St. L. & S. F.
PR—C. A. Beggs, Huntington, Ark.
GS—C. A. Beggs, " "
MS—C. A. Beggs, " "
TR—L. E. Lake, " "
PA—L. E. Lake, " "
EM—H. O. Lewis, Ft. Smith, Ark.
S of H—Mules; track gauge, 32½ in.
S of M—Hand.
PP—Power from central plant, 110-440 volts A. C., 3 phase 60 cycles.
EMP—50.
Output, 15,000 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

PRAIRIE CREEK COAL MINING CO.
General Office, Fort Smith, Ark.
No. 4 Prairie Creek Mine, Shaft and Slope; Lower Hartshorne.
PO—Midland, Ark.; SP—Same; CTY—Sebastian; RR—Midland Valley.
PR—F. Bache.....Ft. Smith, Ark.
TR—E. P. Jayner, " "
VP—C. H. Finley, " "
GS—J. S. Cameron.....Midland, Ark.
S of H—Rope and mules.
S of M—Hand and elec. mach.
Sales Agent, McAlester Fuel Co., McAlester, Okla.

RUSH-BEHANAN COAL CO.
Out of business.

SCHMIDT-BLAKELY COAL COMPANY.
Schmidt-Blakely Mine, Shaft; Hartshorne Seam; 3 to 4 ft. 2 in. thick.
PO—Coal Hill, Ark.; SP—Denning Yards, Ark.; CTY Franklin; RR I. M. S.
PR—Charles Schmidt, 1200 N. 11th St., Ft. Smith, Ark.
TR—R. A. Schmidt.....Coal Hill, Ark
GM—R. A. Schmidt, " "
PA—R. A. Schmidt. " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers total 180 H. P. 2 compressors, 4 pumps.
EMP—15. Last fiscal year output 43,000 tons.

SCRANTON ANTHRACITE COAL CO.
PO—Clarksville, Ark. No report.

SOUTHERN ANTHRACITE COAL MINING CO
Bernice Mine; Shaft; Shinn Basin Seam, 24 in. thick.
PO—Russellville, Ark.; SP—Same; CTY—Pope; RR—D. & R.

Continued on Next Page.

SOUTHERN ANTHRACITE COAL MINING CO.—CONTINUED.
PR—J. G. Puterbaugh, McAlister, Okla.
TR—G. S. Smith.....Russellville, Ark.
PA—G. S. Smith, " "
A. Y. Hayes, " "
SM—A. Y. Hayes, " "
GS—Lee McDowell, " "
MM—Lee Kersey, " "
EE—Lee Kersey, " "
MS—John Fincher, " "
S of H—Steam gasoline and elec. hoists, rope and mules.
S of M—Hand.
PP—3 Heine water tube boilers, gen. units, 220 volts A. C., 60 phase; 1 pump; Power purchased.
EMP—250. Last fiscal year output 60,000 tons.

SPADRA CREEK COAL CO.
Spadra Creek Mine; Shaft; Spadra Seam, 36 to 42 in. thick.
PO—Clarksville, Ark.; SP—Spadra, Ark.; CTY—Johnson; RR—Mo. Pac.
PR—C. M. Jackman....Witchita, Kan.
TR—P. P. Mardis.....Clarksville, Ark.
GM—P. P. Mardis, " "
PA—P. P. Mardis, " "
EM—P. P. Mardis, " "
MS—Robert Griffith, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 180 H. P., 1 pump.
EMP—95. Last fiscal year output, 20,000 tons. Sales Agency, Spadra Clarksville Coal Co.

STANDARD COAL CO.
Paris Mine; Shaft; Paris Seam; 32 in. thick.
PO—Paris, Ark.; SP—Same CTY—Logan; RR—Ark. Central.
PR—H. M. Johns.....Paris, Ark.
TR—Chas. F. Wahl, " "
GM—Chas. F. Wahl, " "
PA—Chas. F. Wahl, " "
MS—H. S. Foster, " "
EM—H. S. Foster, " "
MM—Robert Clery, " "
SCO—Johns Bros., " "
S of H—Mules and steam; track gauge 28 in.
S of M—Hand.
PP—2 Return tubular boilers total 180 H. P.
EMP—82. Last fiscal year output, 14,000 tons. Sales agent, Sheridan Coal Co., Kansas City, Mo.

STERLING ANTHRACITE COAL CO.
Shaft Mine; Spadra Seam, 30 to 36 in. thick.
PO—Clarksville, Ark.; SP—Same; CTY—Johnson; RR—St. L. I. M. & S.
PR—Max Heiman, Little Rock, Ark.
TR—J. E. Nichols, Clarksville, Ark.
GM—J. E. Nichols, " "
PA—J. E. Nichols, " "
GS—J. B. King, " "
SCO—Alvin Laser & Co., " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—Boiler, 80 H.P., 3 gen' units, 1 pump.
EMP—100. Output 17,500 tons.
Successors to the Union Anthracite Coal Co.

TURNIPSEED COAL CO.
Greenwood and Excelsior Mines.
PO—Greenwood, Ark. No report.

UNION ANTHRACITE COAL CO.
Succeeded by Sterling Anthracite Coal Co.

WEST COAL CO.
Nos. 1, 2, 3, 4, 5 and 6; Shaft; Stewell Seam.
PO—Coal Hill, Ark.; SP—Same; CTY—Johnson. RR—St. L. I. M. & S.
MS—W. H. West.
S of H—Horses.
S of M—Hand.
PP—Boiler.

WESTERN COAL & MINING CO.
General Office, St. Louis, Mo.
3 Mines in Arkansas, 8 Mines in Kan. 1 Mine in Illinois, 6 Mines in Missouri.
PR—W. J. Jenkins.....St. Louis, Mr.
GM—W. J. Jenkins, " "
TR—F. M. Hinkman....St. Louis, Mo.
GM—W. J. Jenkins, " "
GS—J. H. Shaw, " "
PA—D. Simpson, " "
EM—C. L. Moorman, " "
SCO—J. L. Worrall, " "

No. 2 Mine; Shaft; Seam 3 ft. 10 in. thick.
PO—Denning, Ark; SP—Same; CTY—Franklin; RR—I. Mtn.
MS—D. M. McGraw.....Denning, Ark.
S of H—Elec. loco. and mules.
S of M—Hand.
Nos. 17 and 18 Mines; Shaft; Seam, 4 ft. thick.
PO—Jenny Lind, Ark.; SP—Same; CTY—Sebastian; RR—I. Mtn.
MS—H. L. Adams....Jenny Lind, Ark.
S of H—Mules and elec.
S of M—Hand.

WOODSON COAL CO.
Hartford Mine, Slope, Seam 3½ ft. thick.
PO—Hartford, Ark.; SP—Same; CTY—Sebastian; RR—M. V.
PR—C. C. Woodson....Huntington, Ark.
TR—C. C. Woodson, " "
GM—C. C. Woodson, " "
MS—C. R. Holbrook....Hartford, Ark.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—3 Return tubular boilers, total 290 H. P.
EMP—100. Last fiscal year output 48,000 tons. Sales Agent, McAlester Fuel Co., McAlester, Okla.

WOODSON-BARR COAL CO.
No. 131 Mine; Slope; Semi-Ant. Seam, 48 o 78 in. thick.
PO—Bonanza, Ark.; SP—Same; CTY—Sebastian; RR—Frisco.
PR—John Barr.....Bonanza, Ark.
GM—John Barr, " "
MS—John Barr, " "
S of H—Mules.
S of M—Hand.
PP—2 Boilers, 100 H. P., and 3 pumps.
EMP—75. Last fiscal year output, 48,500 tones. Sales Agency, Central Coal & Coke Co. Successors to Woodson-Strickland Coal Co.

CANADA

For List of Abbreviations See Page 498.

ACADIA COAL CO., LTD.
General Office, Stellarton, Nova Scotia.
PR—Sir Montagu Allan, Montreal, P.Q.
TR—Hector Prudhomme, " "
GM—Cadwallader Evans, Stellarton, N.S.
PA—George Gray, " "
EM—Felix E. Notebaert, " "
MM—F. F. Courthope, " "
EE—L. E. Martheleur, " "
SCO—Central Store; Buyer George Gray, Stellarton, N. S.

Albion & Mac Gregor Mines, Slope; Foord, Cage, Third and MacGregor Seams, 96 to 192 in. thick.
PO—Stellarton, N. S.; SP—Same; CTY—Pictou; RR—I. R. C.
MS—John Higson....Stellarton, N. S.
SM—Q. S. Mitchell, " "
S of H—Rope and 2 steam locos.; track gauge 26 in.
S of M—Hand and 10 Comp. air mach.
PP—1 Stirling water tube boiler, total 212 H. P., 4 gen. units, 110 volts D. C., 2 Elec. air comp., 2 pumps, Power from Allan Mine.
EMP—670. Last fiscal year output 262,080 tons.

Allen Mine, Shaft, Foord Seam, 40 ft. thick.
PO—Stellarton, N. S.; SP—Same; CTY—Pictou; RR—I. R. C.
MS—Alex. Sutherland..Stellarton, N. S.
SM—Q. S. Mitchell,..Stellarton, N S.
S of H—Rope and 2 steam locos.; track gauge 36 in.
S of M—Hand and 12 comp. air mach.
PP—10 Babcock & Wilcox water tube boilers, total 3,000 H.P., 1 air comp., 3 pumps, central station.
EMP—470. Last fiscal year output 138,577 tons

Acadia and Vale Mines abandoned.

ALBERTA COAL MINING COMPANY, LTD.
Alberta Mine, Slope; Seam 6 to 12 ft.
PO—Cardiff, Alta.; SP—Same; RR—Canadian Northern, Athaboska Br.
PR—Jas. L. Bell.....Edmonton, Alta.
TR—Geo. S. Montgomery, " "
GM—Geo. S. Montgomery, " "
PA—Geo. S. Montgomery, " "
MS—E. S. Bishop.....Cardiff, Alta.
SM—E. S. Bishop, " "
CE—Norman Frazer....Edmonton, Alta.
EM—Norman Frazer, ..Edmonton, Alta.
S of H—Mules. Track gauge 32 in.
S of M—Hand.
PP—2 Boilers total 130 H. P.
EMP—108. Last fiscal year output 62,090 tons. Sales Agent, Great Northern Coal Co., Edmonton, Alta.

BANKHEAD MINES, LTD.
General Office, Montreal, Que.
Bankhead Mine, Drift.
PO—Bankhead, Alta.; SP—Same; RR—C. P.
PR—R. B. Angus....Montreal, Que.
SECY—A. B. G. Heward, " "
TR—B. T. Coon, " "
GS—Louis Stockett ....Calgary, Alta.
..SUPT—D. E. Wilson....Bankhead, Alta.
MS—John Watters, " "
EM—R. Dougall, " "
MM—D. Smith, " "
S of H—Comp. air.
PP—110 Volts, A. C., 12 Boilers, total 1600 H. P.
EMP—500.

BATHURST COAL COMPANY, LTD.
General Office, Lethbridge, Alta.
Bathurst Mine, Drift; Lignite Seam; 4 to 5 ft. thick.
PO—Diamond City, Alta.; SP—Kipp, Alta.; RR—C. P. R.
PR—A. W. Cooley....Lethbridge, Alta.
GM—A. W. Cooley, " "
TR—E. A. Sharman, " "
PA—James Hargraves, " "
EM—James Hargraves, " "
MS—James Hargraves, " "
S of H—Hand. Track gauge 36 in.
S of M—Hand.
EMP—30. We are developing mine.
Sales Agent, A. W. Cooley, Lethbridge, Alta.

BATTLE RIVER COLLIERIES.
General Office, Rosenroll, Alta.
Battle River Mine; Shaft; Edmonton, Lignite Seam, 78 to 96 in. thick.
PO—Rosenroll, Alta.; SP—Ohaton, Alta.; RR—C. P.
PR—A. S. Rosenroll.....Wetaskiwin.
TR—A. S. Rosenroll,
GM—C. G. Stacey.....Saskatoon
EM—Norman Fraser....Edmonton, Alta.
MS—G. H. Cunningham, Rosenroll, "
MM—W. B. Halladay, " "
S of H—Mules.
S of M—3 Comp. air mach.
PP—3 Return tubular boilers, total 210 H. P., 1 compressor, 2 pumps.
EMP—29. Last fiscal year output 13,416 tons.
NOTE—New shaft sunk, but not yet equipped June 15th.

BIG VALLEY COLLIERIES, LTD.
Drift Mine; Flat Seam, 72 in. thick.
PO—Big Valley, Alta.; SP—Same; RR—C. N. R.
PR—John Gillespie....Big Valley, Alta.
GM—John Gillespie, " "
TR—Wm. Gillespie, " "
PA—A. Albertson, " "
MS—A. Albertson, " "
EM—Nonna Fraco, " "
MM—F. Rattray, " "
S of H—1 Steam loco. and mules; track gauge 31 in.
S of M—1 Comp. air mach.
PP—Boiler, 50 H. P.
Output, 100 tons per day.

BLOCK COAL COLLIERIES.
Block Coal Collieries, Drift; Seam, 3½ to 4 ft. thick.
PO—Taber, Alta.; SP—Same; RR—C. P. R.
GM—C. Bilteryst.....Taber, Alta.
PA—J. Bilteryst, " "
MS—J. Bilteryst, " "
GM—C. Belteryst.....Taber, Alta.
PA—C. Belteryst, " "
MS—C. Belteryst, " "
S of H—Rope and steam; track gauge 30 in.
S of M—Elec. cutting machine.
PP—2 Boilers, total 220 H. P., 1 gen. unit, 500 volts, D. C.

BONNIE BRAE COAL & QUARRIES, Ltd.
Out of business.

BRAZEAU COLLIERIES, LTD.
General Office, Toronto, Ont.
Nordegg Mine; Tunnel.
PO—Nordegg, Alta.; SP—Same; RR—Can. Nor., Brazeau Sub. Div.
PR—Sir William Mackenzie, Toronto, Can.
TR—R. P. Ormsby, "
VP—Martin Nordegg.....Nordegg, Alta.

BRECKENRIDGE & LUND COAL CO., LTD.
PR—Harold Darling...Lundbreck, Alta.
VP—J. H. Wellington, " "
SECY—H. F. Breckenridge, " "
GM—H. C. Lancaster, " "

BRITISH COLUMBIA SKEENA COAL CO., LTD.
General Office, Hochelaga Bank Bldg., Quebec.
PR—James G. Scott.....Quebec
TR—Alex Hardy, "
Developed eight tunnels on eight different seams, not yet producing coal.

BRITISH PACIFIC COAL CO.
General Office, Queen Charlotte, B. C.
Just developing.

CALGARY COLLIERIES, LTD.
General Office, Calgary, Alta.
Lessee—Wm. R. Walsh, Ardley, Alta.
Seam 6 ft. thick; 2 entries.
PO—Ardley, Alta; SP—Same; RR—Grand Trunk Pacific.
PR—Col. James A Walker, Calgary, Alta
GM—Col. James A. Walker, " "
TR—F. E. Kenaston....Hopkins, Minn.

CAMBRIAN COLLIERIES, LTD.
Bell Mine; Shaft; Seam, 58 to 64 in. thick.
PO—Namao, Alta.; RR—E, D. & B. C., Bell Spur Br.
PR—D. M. Duggan.....Namao, Alta.
TR—D. Jones, " "
GS—D. Jones, " "
EM—D. Jones, " "
S of M—Hand.
PP—1 Water tube boiler, 50 H. P., and 1 pump. Output, 100 tons per day.

CANADA WEST COAL CO., LTD., (THE)
Mine No. 1, Slope, Seam 45 to 56 in. thick.
PO—Taber, Alta.; SP—Same RR—Canadian Pacific, Crows Nest Pass Br.
PR—O. A. Robertson, San Francisco, Cal.
GM—J. R. Howard.....Taber, Alta.
PA—J. R. Howard, " "
MS—Moses Johnson, " "
CE—E. S. F. Huntrods, " "
EM—E. S. F. Huntrods, " "
MM—Wm. McMahon, " "
S of H—Mules and 4 Elec. locos; track gauge 36 in.
S of M—Hand and 2 elec. and 24 comp. air machines.
PP—6 Return tubular boilers, total 900 H. P., 3 gen. units, 2-250 D. C. and 2,400 A. C., 3 phase and 60 cycles, 2 comp., 2 pumps.
EMP—362. Last fiscal year output 98,000 tons.
Sales Agent, C. E. McQuaid, Regina, Sask.

CANADIAN COAL CON., LTD. (THE)
Now Franco-Canadian Collieries, Ltd.

CANADIAN PACIFIC RAILWAY (Dept. of Natural Resources.)
General office, Montreal, Que.
Bankhead Mine; Drift, 24 to 108 in. thick.
PO—Bankhead, Alta.;—SP—Same; RR—C. P.
PR—Sir Thos. G. Shaughnessy, Montreal, Que.
TR—H. E. Suckling, " "
GM—P. L. Naismith....Calgary, Alta.
GS—Lewis Stockett, " "
PA—J. T. H. Ferguson, " "
EM—B. L. Thomas, " "
MS—D. G. Wilson..Bankhead, "
MM—D. Smith, Bankhead, Alta, and H A. McMillan, Lethbridge, Alta.
S of H—8 Comp. air loco.; track gauge, 36 in.
S of M—Hand.
PP—9 Robb Eng. Co. return tubular boilers, total 1,350 H. P., 2 gen. units, 2,300 volts A. C., 3 phase, 60 cycles, 3 compressors.
EMP—400. Last fiscal year output, 170,971 tons. Sales Agent, B. T. Coon, Calgary, Alta.

CANADIAN COAL & COKE CO.
General Offices, Montreal, Que.
PR—H. A. Lovett.....Montreal, Que.
GM—H. A. Lovett, " "
TR—S. T. Mains.....Edmonton, Alta.
PA—J. G. Cockrane, " "
GS—N. C. Pitcher, " "
CE—N. C. Pitcher, " "
EM—W. D. Strand..Beaver Mines, Alta.
MM—Robert Brown " "
EE—Robert Brown—, " "
Sales Agent, J. O. Hannah.

Lethbridge Colliery; Shaft; Seam, 4½ ft. to 5½ ft. thick.
PO—Coalhurst, Alta; SP—Kipp, Alta; RR—C.P.
MS—Wm. Maxwell....Coalhurst, Alta.
MM—R. Brown.....Coalhurst, Alta.
S of H—Horses and endless rope. Track gauge 36 in.
S of M—55 comp. air mach.
PP—6 B. & W. water tube boilers, total 1500 H. P., 2 gen. units 2200 volts A. C., 3 phase and 60 cycles; 1 comp., 2 pumps.

EMP—450. Last fiscal year output 200,000 tons.

Pacific Pass Mines; Slope; 16 and 18 ft. thick.
PO—Lovett, Alta.; SP—Same; RR—Grand Trunk Pacific.
MS—A. A. Miller.....Lovett, Alta.
MM—J. Burchell.....Lovelville, Alta.
S of H—Horses and tail rope; track gauge 36 in.
S of M—2 Comp. air mach. and hand.
PP—4 B. & W. water tube boilers, total 1000 H. P., 2 gen. units 2200 volts A. C., 3 phases and 60 cycles; 2 pumps.
Note—Just developing.

St. Albert Mines; Shaft.
PO—St. Albert, Alta.; RR—Canadian Nor.
GM—T. O'Donnell....St. Albert, Alta.
MS—C. McGillvary, " "
NOTE—Developing, June 15th.

Beaver Colliery Mine; Drift and Slope; No. 2 Seam, 88 in. thick.
PO—Beaver Mines, Alta.; SP—Pincher Station, Alta.; RR—C. P.
MS—Samuel McVicar, Beaver Mines, Alta.
S of H—Rope and mules.
S of M—Hand.
PP—4 Return tubular boilers, total 600 H. P., gen. units, 2,300 A. C., 3 phase 60 cycles.
EMP—78. Last fiscal year output, 27,826 tons.

CANADIAN COLLIERIES (Dunsmuir) Ltd
General Office, Victoria, B. C.
PR—Sir Wm. Mackenzie, Toronto, Ont.
TR—A. J. Mitchell, " "
GS—J. R. Lockard..Cumberland, B. C.
PA—H. Browning.....Victoria, B. C.
EE—Frank Sawford..Union Bay, B. C.
SCO—Island Supply Co. Buyer, W. E. Lawrence, Bevan, B. C.
Sales Agent, C. E. Thomas, Victoria, B.C.

Comox Mines, 2 Shafts and 2 Slopes; operate washery.
PO—Cumberland, B. C.; SP—Union Bay B. C.
MS—G. W. Clinton..Cumberland, B. C.
SM—W. E. Lawrence....Bevan, B. C.
S of H—Elec.
S of M—Hand and 3 Sullivan Elec Chain Mach.
PP—2 Gen. units 12,000 and 13,000 volts A. C. 3 phase, 25 cycles; Hydro Elec. plant.
EMP—1000. Coke ovens, 150 Bee Hive.

Wellington Mines; Slopes, operate washery.
PO—Ladysmith, B. C.; SP—Same.
MS—J. H. Cunningham, Ladysmith, B. C.
S of H—3 Elec loco and mules
S of M—Hand.

CANMORE COAL CO.
Slope Mine.
PO—Canmore, Alta.; SP—Same; RR—C. P.
PR—James B. Neale....Minersville, Pa.
TR—S. B. Thorne, " "
MGR—Mont B. Morrow, Canmore, Alta.
PA—W. H. Evans, " "
MS—Wm. Musgrove, " "
EM—T. B. Williams, " "
MM—H. W. Evans, " "
EE—V. Pearson, " "
SCO—Rundle Mountain Trading Co., Canmore, Alta.
S of H—5 Comp. air loco.; track gauge 26 in.
S of M—Hand.
PP—5 Leonard & Son return tubular boilers, total 750 H. P., 3 gen. units A. C., 3 phase, 60 cycles, 2 compressors, 4 pumps.
EMP—300. Last fiscal year output, 155,000 tons.

CAPE BRETON COAL, IRON & RAILWAY CO.
Broughton Mine, Slope, Broughton Seam 5 ft. 6 in. to 6 ft. 6 in. thick.
PO—Broughton, N. S.; SP—Homeville; RR—Sydney & Louisburgh
PR—Horace Wayburn, Chester, England.
TR—H. S. Hope,....London, England
GM—Chas. J. Coll, Broughton, N. S.
PA—W. Gloves, " "
MS—E. Park, " "
EM—W. J. Ferguson, " "
MM—J. A. McDonald, " "
EE—D. Neil, " "
S of H—Gravity; 1 steam loco.; track gauge 36 in.
S of M—Hand and 6 comp. air mach.
PP—B.&W. Water tube boilers, total 600 H. P., 1 gen. unit, 110 volts D. C., 2 comp., 2 pumps.
EMP—125. Mine just opened. Last fiscal year output 8,500 tons.

CAPITAL COAL CO.
Shaft Mine; Seam 144 to 168 in. thick.
PO—Cardiff, Alta.; SP—Same; RR—C. N. R.
PR—P. Gervais.....Cardiff, Alta.
TR—J. S. Ballantyne, " "
PA—P. J. Gorman, " "
CE—N. Fraser, " "
MM—E. Gervais, " "
S of H—Mules.
E of M—Hand.
PP—2 Water tube boilers, total 180 H. P., 2 pumps. Last fiscal year output, 90,500 tons.

CARDIFF COLLIERIES, LIMITED (THE)
General Office, Winnipeg, Man.
Slope Mine; seam 14 ft. thick.
PO—Cardiff, Alta.
PR—Lieut. Col. J. W. del O'Grady, Winnipeg, Man.
VP—Andrew Kelly, " "
TR—J. C. Gage, " "
SECY—W. E. Brown, " "
GM—G. H. Eaton, ... Cardiff, Alta.
MS—F. B. Smith, " "

CHINOOK COAL CO., LTD.
General Office, Lethbridge, Alta.
Chinook Colliery Mine, Shaft. Lethbridge Seam, 4 ft. 2 in. to 5 ft. 6 in. thick.
PO—Commerce, Alta. SP—Kipp. RR—Canadian Pacific, Crow's Nest Branch.
PR—Wm. A. Wood, .. Hamilton, Ont.
GM—J. C. Reid, .. Lethbridge, Alta.
PA—H. W. Crawford, " "
MS—A. H. Reid, Commerce, "
SM—A. L. Cannon, " "
EM—C. C. Richards....Commerce, Alta.
MM—A. Higgins, " "
S of H—Rope and mules. Track gauge 3 ft. 6 in.
S of M—21 Comp. Air Machines.
PP—5 Return tubular boilers, total 750 H.P., 1 Gen. Unit, 2,300 volts A.C., 3 phases, 60 cycles, 2 Compressors, 1 pump.
EMP—300. Last fiscal year output 125,000 tons. Sales agent, J. P. Smyth, Lethbridge, Alta.

CLOVER BAR COAL CO., LTD.
General Office, Edmonton, Alta.
Shaft Mine, Lignite Seam 7 ft. thick.
PO—Edmonton, Alta; RR—Grand Trunk Pacific.
PR—H. E. Rogers,.. Edmonton, Alta.
VP—J. J. Milledge, " "
SECY—J. F. Hunter, " "
TR—H. H. Robertson, " "
GM—J. F. Hunter, Clover Bar, Alta.
MS—David Jones, " " "

COALBECK COAL & CLAY PRODUCTS CO.
Coalbeck Collieries & No. 1 Entry Mines, Slope and Drift, Pempina or Big Seam 5 to 8 ft. thick.
PO—Coalbeck, Castor. SP—Castor. CTY—Alberta. RR—C. P., Lacomb Branch.
PR—Carl Stettler, ... Castor, Alta.
GM—Otto Von Hough, " "
CE—T. B. Stephens, Calgary, "
MM—Albert Hallseth, Castor, "
MS—Otto VonHough, ... Castor, Alta.
S of H—Mules. Track gauge 32 in.
S of M—Hand.
PP—3 pumps, gasoline engine.
EMP—17 to 41. Last fiscal year output 12,000 tons. Sales agent, H. S. Northwood, Castor, Alta.

COLONIAL COAL CO., LTD.
General Office, North Sydney, N. S.
PR—Hon. N. Curry, .. Montreal, Que.
TR—R. S. Cottrell, " "
EM—R. S. Cottrell, " "
GM—W. A. Mackay, North Sydney, N.S.
PA—R. Blane, " " "

Mackay Mine, Slope, Ingraham Seam, 3½ to 4½ ft. thick.
PO—North Sydney, N.S. SP—Same. RR Intercolonial.
MS—D. Rorison,. North Sydney, N.S.
S of H—Elec. loco. and horses. Track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 200 H. P., 1 gen. unit 250 volts D. C.. Power also purchased.
EMP—85. Last fiscal year output, 41,000 tons.

Colonial Mine, Slope, Collins Seam, 4½ to 6½ ft. thick.
PO—Little Bras d'Or N. S. SP—Same. RR—Intercolonial.
MS—Thomas Carr, Little Bras d'Or, N.S.
S of H—Horses. Track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 1,200 H.P., 1 gen unit 250 volts D.C. 2 pumps.
EMP—75. Last fiscal year output 32,860 tons.
NOTE—Two Briquetting plants, capacity 30 tons per hour.

COLUMBIAN COAL & COKE CO., Ltd.
General Office, 614 Grain Exchange Bldg., Winnipeg, Man.
Coalmont Collieries; Drift; Seam 30 to 48 in. thick.
PO—Coalmont, B. C.; SP—Same; RR—C. P. R. & Great Northern.
PR—W. L. Parrish, Grain Ex. Bldg, Winnipeg, Man.
TR—J. T. Haig, " " "
S of H—Mules.
S of M—Hand (Comp. air later).
PP—Air comp.
EMP—20. Last fiscal year output, 6,000 tons.

CONN, WILLIAM.
Plume Creek Mine, Drift, Lignite Seam, 12 ft. thick.
PO—Wolchester, Alta.
S of H—Mules. Track gauge 2 ft.
S of M—Hand.
EMP—4. Last fiscal year output 592 tons.

CORBIN COAL & COKE CO.
General Office, Spokane, Wash.
Nos. 3 and 4 Mines, Stripping and drift. Seam 40 to 260 ft. thick.
PO—Corbin, B. C. SP—Same, via McGillivray. RR—Eastern B. C. Ry.
PR—D. C. Corbin, .. Spokane, Wash.
GM—R. S. Ord.....Spokane, Wash.
TR—A. M. Allen, " "
PA—Charles Graham, .. Corbin, B.C.
MS—Charles Graham, " "
EM—W. B. Hetherington..Corbin, B. C.
SCO—Flathead Trading Co. Buyer, E. J. Roberts, Jr., Corbin, B.C.
S of H—1 Comp. air loco. and horses. Track gauge 24 and 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 500 H.P. 1 gen. unit, 2,300 volts A. C., 3 phase, 60 cycles; 1 compressor.
EMP—120. Last fiscal year output 83,973 tons.

CROW'S NEST PASS COAL CO. LTD.
General Office, Fernie, B. C.
Coal Creek, Michel and Carbonado Mines, Drift.
PO—Coal Creek, Michel and Carbonado B. C. SP—Fernie, Michel, Morrissey, Jct. Swinton, B. C.; RR—C. P. & G. N.
PR—Elias Rogers, ... Toronto, Ont.
VP—E. C. Whitney, .. Ottawa, "
GM—W. R. Wilson, ... Fernie, B.C.
PA—R. M. Young, " "
MS—B. Canfield.....Coal Creek, B. C.
Thos. Russell, Michel, B. C.
S of H—Comp. air.
S of M—Hand and machine.
EMP—2,000. Coke ovens, 1,180 Bee Hive type. Last fiscal year output 871,814 tons. Gen'l Sales Agt., John Rogers, Fernie, B. C.

CUMBERLAND RY. & COAL CO.
Absorbed by the Dominion Coal Co.

DAVENPORT COAL COMPANY, LTD.
General Office, Spokane, Wash., U.S.A.
PO—Burmis, Alta. SP—Same. RR—Canadian Pacific, Crow's Nest Pass Branch.
PR—F. H. Mason, Spokane, Wash, USA
VP—W. Clayton Miller, " " "
SECY—C. Hussey, " " "
GM—J. Dougall, Burmiss, Alta.
MS—W. A. Barnes, " "
PP—2 boilers, total 160 H.P. D.C. Generator, operating fan, tipple, etc. Tipple equipped with Rotary dump and Marcus Screen and conveyor 60 ft. in length, handling 120 tons of coal per hour.

DAVIS COAL CO.
Alfrida Mine, Drift, "Lignite" Seam, 3½ to 4 ft. 10 in. thick.
PO—Halkirk, Alta. SP—Same. RR—C. P. R., Lacombe Branch.
S of H—Hand. Track gauge 23 in.
S of M—Hand.
Last fiscal year output 482 tons.

DAWSON COAL CO (THE) LTD.
PR—Richard Gerard, ..Edmonton, Alta.
VP—John Henderson, " "
GM—Charles A. Hyndman, " "
MS—J. A. McLenham, " "
Tipple capable of handling 500 tons per day.

DIAMOND COAL CO.
General Office, Calgary, Alta. Mine closed since June, 1913. Reorganizing the company.

DIAMOND VALE COLLIERIES, LTD.
General Office, Vancouver, B.C.
Diamond Vale Mine, Seam 5 ft. thick.
PO—Merritt, B. C. SP—Same. RR—C. P. and Kettle Valley.
PR—T. J. Smith, ...Vancouver, B.C.
GM—T. J. Smith, " "
TR—J. A. MacInnes, " "
S of H—Steam. Track gauge 30 in.
S of M—Hand.
PP—Babcock & Wilcox boiler, total 300 H.P. Commenced development only Not started mining.

THE DOBELL COAL CO., OF TOFIELD, LTD.
General Office, 138 St. Peter St., Quebec.
Stripping, Edmonton Formation Seam, 7 to 11 ft. thick.
PO—Tofield, Alta. SP—Same. RR—Grand Trunk Pacific, Calgary Tofield Branch.
PR—W. M. Dobell, ... Quebec, Can.
TR—F. O. Judge, " "
GM—T. R. Henderson, Tofield, Alta Can.
S of H—Horses. Track gauge 2 ft. and 56½ in.
S of M—Hand.
PP—3 Water tube boilers, each 60 H P.
EMP—30. Last fiscal year output 26,000 tons.

DODDS, CURRIE & HODING.
Stopp Mine. Slope; "Lignite" Seam, 3 ft. 6 in. to 4 ft. 2 in. thick.
PO—Carbon, Alta.
GM—Fred Bessant.
S of H—Horses. Track gauge 26 in.
S of M—Hand.
PP—1 pump.
EMP—6. Last fiscal year output 2,766 tons.

DOMESTIC COAL COMPANY.
See White Ash Collieries, Ltd.

DOMINION COAL CO.
General Office, Glace Bay, N.S.
PR—J. H. Plummer, .. Toronto, Ont.
TR—C. S. Cameron,... Sydney, N.S.
GM—D. H. McDougall..Glace Bay, N. S.
PA—J. W. Revere, .. Glace Bay, N.S.
EM—A. J. Tonge, " "
MM—J. S. Whyte, " " "
EE—V. McFadden, " " "
SM—F. H. Stephenson,
Sales agent, Alex Dick, Montreal, Que.

Nos. 1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 14, 17, 15, 16, 21 and 22 Mines. Shaft and slopes; Phalen, Hub, Harbor, Emery, Victoria and Lingam, Birch Gorve and Springhill Seams, 54 to 90 in. thick. Operate Washery.
PO—Glace Bay, N.S. and Springhill, N.S. SP—Same. CTY—Cape Breton and Cumberland. RR—Cumberland Ry., Sidney & Lewisburg Ry.
S of H—Comp. air loco. steam and elec. engines, endless rope and horses.
S of M—Comp. air mach. and hand.
PP—2 central power station.
EMP—13000. Last fiscal year output 5,120,583 tons.

DRUMHELLER COAL & COKE CO. LTD.
Drumheller Mine; Slope; Seam 42 to 114 in. thick.
PO—Drumheller, Alta. SP—Same RR—Canadian Northern, Calgary-Saskatoon Br.
PR—Samuel Drumheller, Drumheller, Alta.
GA—Samuel Dromheller, " "
PA—Samuel Drumheller, Drumheller, Alta
TR—J. L. Drumheller, Spokane, Wash.
MS—Jas. Darbyshire,..Drumheller, Alta.
EM—Jas. Darbyshire, " "
MM—Adam Gray.
S of H—Mules and rope. Track gauge 3 ft.
S of M—Hand.
PP—1 Water tube. 1 Jenckes return tubular boiler, total 175 H. P., 4 generating units, 3 pumps. Sales agent, Ralph R. Maxson, Drumheller, Alta.

EDMONTON OIL & ASPHALT CO. (THE)
General Office, Edmonton, Alta.
Riviere Qui Barre Mine, Shaft, Seam 7 to 8 ft. thick.
PO—Riviere Qui Barre, Alta SP—Morinville. RR—C.N.R.
PR—L. A. Arsenoult, Edmonton, Alta.
TR—L. G. Bourget, " "
S of H—Steam, cables.
S of M—Hand.

ELLIS MINES.
Ellis Mines, Slope, Lignite Seam 42 to 48 in. thick.
PO—Champion, Alta. SP—Same. RR—C.P.R.
PR—Wm. Ellis, ... Champion, Alta.
MS—Wm. Ellis, " "
S of H—Mules. Track gauge 25 in.
S of M—Hand.
EMP—8 to 12. Last fiscal year output 4,500 tons.

EUREKA COAL CO., LTD.
General Office, Taber, Alta.
Shaft, Seam 4 ft. thick.
PR—F. Barton, ... Taber, Alta
GM—F. Barton " "
TR—J. F. Kramer, " "

FRANCO CANADIAN COLLIERIES, Ltd.
Shaft and Old Mines.
PO—Frank, Alta.; SP Same; RR—Can. Pac.
PR—Viscount Pierre de Chevilles, Boullaume, Lisrville (Oise), France.
GM—C. J. Tompkins.....Frank, Alta.
GS—J. R. McDonald, " "

Continued on Next Page.

Seam; 3 to 5 ft. thick.
S of H—Gasoline loco., rope and mules.
S of M—Hand.
PP—4 Boilers, total 1,000 H. P., gen. units, 2,300 volts A. C.
Successors to the Canadian Coal Con. Ltd.

GAINFORD COLLIERIES, Ltd.
PO—Gainford, Alta.
No report.

GEORGETOWN COLLIERIES, LTD.
General Office, 28-30 Line Street, London, England.
No. 3 Mine; Slope; Anthracite Seam, 57 to 66 in. thick.
PO—Canmore, Alta.; SP—Same; RR—C. P.
Chairman, S. K. George, The Brackeds, Ascot, England; Sec'y, W. E. Y. Hale, Yatt acke Creane Road, Sutton Surv ay, England.
GM—W. H. Wain.....Canmore, Alta.
PA—H. W. Francis " "
MS—J. L. Parker, " "
EM—J. L. Parker, " "
CE—W. H. Wain, " "
MM—H. Alexander, " "
EE—H. Bryce.....Bauff, Alta.
S of H—Steam hoist and rope; track gauge 26 in.
S of M Hand.
PP—3 Return tubular boilers, total 300 H. P., gen. unit, 50 K. W., 220 volts, D. C., 1 pump.
EMP -119.

GRAND TRUNK B. C. COAL CO.
See The Seaton Coal Co., Ltd., Vancouver, B. C., Canada.

GREAT WEST COAL CO., LTD.
General Office, Edmonton, Alta.
PR—James C. Dunn, ..Edmonton, Alta.
TR—Thomas S. Campbell, " "
GS—Alex. C. Dunn, .Clover Bar, Alta.
MM—Antonia Beaumonte " " "

Great West Mine, Shaft; Seam 4½ to 8 ft. thick.
PO—Clover Bar, Alta. SP—Same. RR—Grand Trunk Pacific.
MS—Alex C. Dunn,. Clover Bar, Alta.
S of H—Mules. Track gauge 21 in.
S of M—3 Comp. air mach. and hand.
PP—2 Robb-Manford, 2 Waltrous Eng. Co. return tubular boilers, total 1,360 H.P., 1 gen. unit, 110 volts D.C.
EMP—130. Last fiscal year output, 47,000 tons.

Black Diamond Mine; Seam 5½ to 8 ft. thick.
PO—Clover Bar, Alta. SP—Same. RR—Grand Trunk Pacific.
MS—John Russell .. Clover Bar, Alta.

GREENAWAY COMPANY.
Greenaway Mine, Slope, Seam 4 to 5 ft. thick.
PO—Reidhill, Alberta. SP—Champion. RR—C.P.R.
PR—W. J. Greenaway, Reidhill, Alta.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
EMP—4. Last fiscal year output 2,000 tons.

HAECKL, J. A.
Grey Eagle Mine, Drift, 4¾ to 5¼ ft. thick.
PO—Lonbutte, Alta. SP—Hauma, Alta. RR—C. N. R.
GM—J. A. Haeckl, ... Lonbutte Alta.
S of H—Gravity. Track gauge 2 ft.
S of M—Hand. Last fiscal year output 1,200 tons.

HALBERT BROS.
Slope Mine, Lignite, 72 in. thick.
PO—Trochu, Alta. SP—Same. RR—Grand Trunk.
GM—David Halbert, .. Trochu, Alta.
PA—Robert Halbert, " "
MS—O. Halbert .....Trochu, Alta.
S of H—Horses. Track gauge 24 in.
S of M—Hand.
EMP—5. Last fiscal year output 1,505 tons.

SUNLIGHT & WHITE FLAG MINES.
Sunlight Mine, Drift, Seam 5 to 7 ft. thick.
PO—Highland, Alta. SP—Same. RR—C.N.R. Goose Lake Branch.
MS—A. F. Zoberg, .. Highland, Alta.
S of H—Gravity. Track gauge 24 in.
S of M—Hand. Last fiscal year output, 1,000 tons.

HEDSTROM BROS.
Hedstrom Mine, Drift, Seam 24 to 48 in. thick.
PO—Carbon, Alta.
PR—Chas. J. Hedstrom..Carbon, Alta.
GM—Chas. J. Hedstrom, " "
S of H—Mules. Track gauge 27 in.
S of M—Hand.
EMP—2. Last fiscal year output, 85 tons.

HILKER COAL CO.
Hilker Mine, Lignite Seam 6 to 7 ft. thick.
PO—Halkirk, Ala. SP—Same. RR—C.P.
S of H—Mules. Track gauge 23 in.
S of M—Hand.
EMP—8. Last fiscal year output 1,500 tons.

HILLCREST COLLIERIES, LTD.
General Office, Montreal, Que.
Hillcrest Mine; Slope.
PO—Hillcrest, Alta.; SP—Same; RR—Can. Pac.; Crow's Nest Pass Div.
PR—C. B. Gordon.....Montreal, Que.
MGR-DIR—J. M. Mackie, " "
TR—Frank J. Smith....Hillcrest, Alta.
GM—Robert G. Drinnan, " "
MINE-MGR—R. T. Stewart, " "
EM—William Hutchinson, " "
MM—Thomas Hargreaves, " "
MS—Robert T. Stewart, " "
S of H2 Steam loco.; track gauge, 36 in.
S of M—Hand.
PP—6 Goldie, McCullough water tube boilers, 750 h. P., gen. unit, 2,300 volts A. C., 3 phase, 60 cycles; 1 compressor,, 1 pump.
EMP—376. Last fiscal year output, 213,979 tons.

HOSMER MINES, LTD.
Mine abandoned.

HOOVER, FRANK T.
Drift and Stripping Mines.
PO—Corbin, B. C.; SP—Same; RR—E. B. C. Owner, Frank T. Hoover, E. 1416, 11th Ave., Spokane Wash.
NOTE—A company about to be formed. Prospecting and development is still going on. Expect to install the latest and most economical plant possible.

HUMBERSTONE COAL CO.
General Office, Edmonton, Alta.
PO—Clover Bar, Alta.
PR—E. J. Humbertone..Edmonton, Ala.
GS—E. J. Humberstone..Edmonton, Alta.
GM—E. E. Brewer . Edmonton, Alta
MS—W. Duggan.....Clover Bar, Alta.
EM—W. Duggan.....Clover Bar, Alta.
MM—C. Stratton.....Clover Bar, Alta.

INLAND COAL & COKE CO.
General Office, Merritt, B.C.
Inland Mine, Slope and Shaft, Seam 10 ft. thick.
PR—Geo. I. Wilson, Vancouver, B.C.
VP—W. L. Nichol, " "
SECY—K. C. Smith, " "
TR—K. C. Smith, " "
GM—Joseph Graham, ..Merritt B.C.
MS—Andrew Bryden, " "
S of H—Rope and mules.
S of M—Hand.
PP—2 Leonard boilers, total 100 H P. 1 pump.
EMP—46. Last fiscal year output 51,300 tons.

INTERCOLONIAL COAL MINING CO., Ltd.
Drummond Mine; Slopes; Main or Second Seam, 84 to 204 in. thick. Operate Washery.
PO—Westville, N. S.; SP—Same; RR—I. C.
PR—Charles Fergie, ME. Dominion Express Bldg., Montreal, Que.
EM—Charles Fergie, ME. Dominion Express Bldg., Montreal, Que.
MGR Dir.—Charles Fergie, ME. Dominion Express Bldg., Montreal, Que.
TR—George E. Damant, Montreal, Que.
Mine Mgr.—Thos. Hale, Westville, N.S.
Res. Agt—R. MacDougald, " "
Comptroller—G.P.Gordon, " "
MS—Matthew C. Richardson, Westville, N.S.
S of H—2 Steam loco., horses and gravity; track gauge 32½ in.
S of M—Hand.
PP—8 Water tube, 3 shell and 4 return tubular boilers, total 1,800 H.P., 1 gen. unit 2,300 volts A.C., 3 phase, 60 cycles, 1 compressor, 1 pump.
EMP—700. Coke ovens, 20 Bee Hive. Last fiscal year output 238,884 tons.

INTERNATIONAL COAL & COKE CO. LTD. (THE)
Denison Colliery, Drift, No. 2 and 4 Seams, 6 to 15 ft. thick.
PO—Coleman, Alta. SP—Same. RR Canadian Pacific, Crow's Nest Branch.
PR—Wm. Farwell, .. Sherbrooke Que.
TR—John McKeagan, . Coleman, Alta.
GM—O. E. S. Whiteside, " "
PA—W. B. Bosworth, " "
MS—W. A. Davidson, " "
EM—W. A. Davidson....Coleman, Alta.
MM—James Scott, " "
EE—Thomas Waklem, " "
S of H—10 Compressed Air loco. Track gauge 3 ft.
S of M—Hand and comp. air machines.
PP—10 return tubular boilers, total 1,500 H.P., 2 gen. units, 220 volts D. C., 2 H. S., and 1 L. S. air compressors, 1 pump.
EMP—321. Coke Ovens, 216 Bee Hive. Last fiscal year output, 239,527 tons.

INVERNESS RY. & COAL CO.
Inverness Mine, Slope.
PO—Inverness, N.S. SP—Same. RR—Inverness.
PA—L. W. Mitchell, . Toronto, Ont.
EM—A. H. Arens, .. Inverness, N.S.
GS—H. A. McLeod, " "
MS—J. McGillivray, " "
SB—L. W. Mitchell.....Toronto, Ont.
S of H—Rope and steam loco
S of M—Hand.
PP—6 boilers, 1,400 H.P.
EMP—600.

JASPER PARK COLLIERIES, LTD.
General Office, Edmonton, Alta.
Jasper Mine; Drift; Kootenai Seam, 96 to 144 in. thick.
PO—Pocahontas, Alta.; SP—Same; RR—Can. Nor., Grand Trunk Pac.
PR—J. L. Washburn.....Duluth, Minn.
TR—R. J. Maxwell....Pocahontas, Alta.
GM—R. H. Morris, " "
PA—R. F. Overly, " "
EM—E. P. Elliott, " "
MM—A. Macdonald, " "
MS—A. N. Scott, " "
S of H—3 Comp. air loco.; track gauge, 42 in.
S of M—Hand.
PP—4 Return tubular boilers, total 600 H. P., 2 gen. units, 480 volts A. C., 3 phase, 60 cycles, 1 compressor.
EMP—150. Last fiscal year output, 78,227 tons.

KARAUS, IGNAZ.
Karaus Mine, Drift, Lignite Seam, 7 ft. thick.
PO—Halkirk,, Alta. SP—Same. CTY—Red Deer. RR—Canadian Pacific.
PR—Ignaz Karaus .... Halkirk, Alta.
S of H—Mules. Track gauge 2½ ft.
S of M—Hand.
PP—1 pump Last fiscal year output 600 tons.

KEITH & FULTON COAL CO.
Keith & Fulton Mine, Drift, Lignite Seam, 6 ft to 6 ft. 9 in. thick.
PO—Box 623, ... Edmonton, Alta.
GM—F. B. Smith, " "
EM—F. B. Smith, " "
S of H—Mules. Track gauge 21 in.
S of M—Hand.
EMP—20

KING, G. H.
General Office, Chipman, N.B.
Minto Mine, Shaft, Seam 28 to 32 in. thick.
PO—Minto, N.B. SP—Same. RR — New Brunswick Coal & Ry.
MS—Henry Bauer, ... Minto, N.B.
SM—E. D. King.....Minto, N. B.
S of H—Steam hoists. Track gauge 30 in.
S of M—Hand.
EMP—25. Last fiscal year output 13,117 tons.

LEITCH COLLIERIES, LTD.
Drift Mine.
PO—Passburg, Alberta. SP—Hillcrist, Alta. RR—C.P.
GM—W. L. Hamilton,.. Passburg, Alta.
PA—Jas. Dougall, " "
EM—A. W. Barnes, " "
MS—W. G. Pearson, " "
SM—Jas. Dougall, " "
S of H—Elec. Loco.
S of M—Hand and comp. air.
PP—1 gen. unit 250 volts, D.C., 8 boilers, total 500 H.P.
EMP—350. Coke ovens, 101.

LETHBRIDGE COLLIERIES CO.
See Canadian Coal & Coke Co.

LITTLE, E.
Little Mine; Slope; Lignite Seam; 4 ft. thick.
PO—Longview, Alta.
GM—E. Little.....Longview, Alta.
S of H—Gavity.
S of M—Hand.
EMP—2. Last fiscal year output, 200 tons.

McEVOY, A. (Trustee).
Operating properties of the Columbia Coal & Coke Co.
PO—Coalmont, B.C. SP—Same. RR—G.N.
GS—(Acting) J. C. McDonald, Coalmont, B.C.
CE—Jas. McEvoy, Toronto Ont.
Just developing, will push rapidly this summer.

McGILLIVRAY CREEK COAL & COKE CO.
Carbondale Mine; Slope, Seam, 108 to 168 in. thick.
PO—Coleman, Alta.; SP—Same; RR—Can. Pac.; Crow's Nest Br.
PR—Lorne A. Campbell..Rossland, B. C.
TR—W. E. Cullen, Jr.....Spokane, Wash.
ASST to PR—R. S. McKibbin, Coleman, Alta.
GS—George Kellock, " "
MS—George Kellock, " "
EM—A. G. Macaulay, " "
MM—H. McLeod, " "
EE—C. E. Lane, " "
S of H—3 Elec. and 2 storage battery, loco's; track gauge, 42 in.
S of M—Hand.
PP—Boilers, total 435 H. P., 2 gen. units, 250 volts D. C., 1 compressor, 3 pumps.
EMP—250. Last fiscal year output, 178,000 tons.

MAPLE LEAF COAL CO.
General Office, Spokane, Wash., U.S.A.
PO—Bellevue, Alta.
PR—D. M. Drumheller, Spokane, Wash.
VP—A. Coolidge " "
TR—C. P. Lund, " "
GM—James Finlay, ...Bellevue, Alta.
MS—J. McCullock, " "

MARITIME COAL RY. & POWER CO, LTD.
Joggins Mines; Slope, Joggins Seam, 39 to 42 in. thick.
PO—Joggins Mines, N. S.; SP—Same; RR—Maritime Ry. (Owned by the Company).
PR—Wm. Hanson, St. James St., Montreal, Que.
GM—Robert J. Bell..Joggins Mines, N. S.
PA—Robert J. Bell, " " "
MS—C. J. Kent, " " "
S of H—9 Elec., 3 comp hoisting engines and rope.
S of M—4 Elec. mach.
PP—10 Return tubular boilers, total 1,600 H. P., 3 gen. units, A. C., 3 phase, 60 cycles. Power purchased.
EMP—400. Last fiscal year's output, 100,000 tons.

MIDDLESBORO COLLIERIES, LIMITED
Nos. 1, 2, 3, 4, 5, 6, 7 and 8 Mines; Slopes; Seam 72 to 216 in. thick.
PO—Middlesboro, B. C.; SP—Merritt, B. C.; RR—Can. Pac., Nicola Branch.
TR—H. R. Plommer, Middlesboro, B.C.
PA—W. L. Bradley, " "
MS—Robert Fairfoull, " "
CE—Robert Fairfoull, " "
MM—J. A. Crawford, " "
S of H—1 Steam loco, comp. air hoists, mules and rope; track gauge 36 in.
S of M—6 Comp. air mach and hand.
PP—5 Goldie & McCullough return tubular boilers, 1 loco. boiler, total 1,400 H.P., 2 compressors, 4 pumps.
EMP—145. Last fiscal year output 70,000 tons.
Sales Agency, H. R. Plommer, Middlesboro, B. C.
Successors to the Nicola Valley Coal & Coke Co., Ltd.

MIDLAND COLLIERIES COMPANY, LTD.
Midland Mine, Slope; Edmonton Seam, 5 to 7 ft. thick.
PO—Drumheller, Alta.; SP—Same; RR—C. N. R., Goose Lake to Calgary.
PR—T. G. McMullen.....Truro, N. S.
TR—Jas. McMurray....St. John N. B.
GM—S. Lent McMullen, Drumheller, Alta.
MS—John Robertson, " "
EM—John Robertson, " "
CE—W. F. Jennison.....Truro, N. S.
MM—Edw. Ward.....Drumheller, Alta.
S of H—Mules; track gauge 26 in.
S of M—Hand.
PP—2 boilers, total 105 H. P., 3 pumps.
EMP—90. New Mine first year's operating Last fiscal year output 14,000 tons.
Sales Agent, C. A. Brodigan, 406 McClean Bldg., Calgary, Alta.

MINTO COAL COMPANY, LTD., THE
Mines Nos. 1, 2, 3, 4, 5, and 6, Shafts, Seam 30 in. thick.
PO—Minto, N. B.; CTY—Queens; RR—Canadian Pacific Ry.
PR—Sir Thomas Lait, Montreal Que.
TR—R. B. Hanson, Fredericton, N. B.
GM—John Henderson .... Minto, N.B.
EM—John Henderson, " "
MS—John Henderson.....Minto, N. B.
S of H—Steam hoists; track gauge 30 in.
S of M—Hand.
PP—6 Fire tube boilers, 6 pumps.
EMP—160. Last fiscal year output 81,000 tons.

MINUDIE COAL CO., Ltd.
General Office, Transportation Bldg., Montreal, Que.
Minudie and Victoria Mines; Slope; Seam, 24 to 34 in. thick.
PO—River Herbert, N. S. SP—Same; RR—Joggins.
PR—Jas. Robinson, ...Montreal, Que.
TR—George H. Bisset, " "
GM—John S. Barton, River Herbert N.S.

MM—F. Carmichael and Jos. McCarther, River Herbert, N. S.
S of H—1 Steam loco,
S of M—Hand.
PP—6 Robb. Matherson, return tubular boilers, total 600 H.P., 2 pumps.
EMP—300. Last fiscal year output 72,000 tons.
Sales Agency, R. S. Hibbard, River Herbert, N.S.

MITFORD COLLIERY COMPANY.
Mine No. 1, Seam 4 ft. thick.
PO—Mitford, Alta.; SP—Same; RR—C. P. R.
PR—R. B Bennett, K. C. M. P., Calgary, Alta.
TR—A. Hannah, Cameron, B. C., " "
MS—James Russell.....Mitford, Alta.
MM—W. Waldenberg, " "
S of H—Main rope, track gauge 26 in.
S of M—Hand.
PP—1 Leonard return tubular boiler, total 150 H. P., 1 gen. unit, 250 volts, D. C; 3 pumps.
EMP—26. Last fiscal year output, 8,000 tons.

MORNING STAR COAL CO.
Slope Mine, "Alberta Lignite" Seam, 4½ ft. thick.
PO—Grassy Lake, Alta.; SP—Same;RR—C. P. R.
PR—Geo. Gibson, Sr., Grassy Lake, Alta.
TR—Geo. Gibson, Jr...Grassy Lake, Alta.
TR—Geo. Gibson, Sr., " "
GM—Mark Hancock " "
MS—Mark Hancock....Grassy Lake, Alta.
EM—A. B. Cook.....Taber, Alta.
S of H—Horses; track gauge 30 in.
S of M—Hand.
EMP—5. Output for 4½ mo., 1,200 tons.

MOUNTAIN PARK COAL CO., LTD.
General Office, 301 Tegler Bldg., Edmonton, Alta.
Mountain Park Mine.
PO—Mountain Park, Alta; SP—Same;RR—Grand Trunk Pac. Ry.
PR—C. J. Leyland....Beals, England
SECY—E. M. Anderson, Edmonton, Alta.
GM—N. M. Thornton, " "
PA—L. E. Drummond, " "
MS—Thos. Mather, Mountain Park, Alta
MM—W. F. Henry, " "
SCO—McNaughton-Powell Co. " "
Sales Agent, L. E. Drummond, Edmonton, Alta

NELSON & JOHNSON.
Mine abandoned.

NEW BARNES COAL MINE CO.
New Barnes Mine, Drift, Belly River and Galt Seams, 44 to 54 in. thick.
PO—Royal View, Lethbridge Alta.; SP—Lethridge, Alta.; RR—Canadian Pacific.
GM—A. E. Dupew, Royal View, Lethbridge, Alta.
MS—Jas. Hunter.....Royal View, Alta.
MS—Jas. A. Richards, South Lethbridge, Alta.
SCO—Royal City Mercantile Co., Royal View, Alta.
S of H—Gravity; track gauge 26½ in.
S of M—Hand.
EMP—25. Last fiscal year output 3,254 tons.

NEW CASTLE COAL CO.
New Castle Mine; Shaft and Slope; Seam 54 to 64 in. thick.
PO—Drumheller, Alta.; SP—Same; RR—C. M. R.
PR—Jesse Gouge, ...Drumheller, Alta.
TR—G. M. Coyle, " "
GM—James Holden, " "
MS—James Holden, " "
S of H—Mules.
S of M—Hand.
PP—3 Water tube boilers, total 150 H.P., 2 gen. units 110 volts D.C.
EMP—200. Last fiscal year output 100,000 tons.

NICOLA VALLEY COAL & COKE CO. Ltd.
Succeeded by Middlesboro Collieries, Ltd.

NORTHFIELD COAL CO., LTD.
Mine, Shaft, Sunbury Seam, 28 to 32 in. thick.
PO—Minto, N. B.; SP—Same; CTY—Sunbury; RR—N. B. C. & R., and G. L. C. & R.
PR—Hon. James Barnes, Buctouche, N.B.
GM—Hon. James Barnes, " "
TR—J. M. Kennedy.....Minto, N. B.
PA—J. M. Kennedy....Minto, N. B.
SM—J. M. Kennedy, " "
MS—J. C. Pettley.....Minto, N. B.
S of H—Hand.
S of M—Hand.
PP—1 Boiler, 25 H. P. and 1 Air Comp.
EMP—25. Last fiscal year output 7,500 tons.

NOVA SCOTIA STEEL & COAL CO., Ltd.
General Office, New Glasgow, N. S.
PR—Robt. E. Harris, Halifax, N. S.
GM—Thomas Cantley New Glasgow,N.S.
PA—W. G. Stanfield, " "
GS—Thos. J. Brown, Sydney Mines, N.S.
EM—John Johnson, " "
MM—John Preston, " "
EE—W. H. Pickles, " "
SM—John Ratchford, " "

Sales Agent, W. Lithgow, New Glasgow, N. S.

Princess No. 1 Mine; Shaft; Old Sydney Seam, 6 ft. thick; operate washery.
PO—Sydney Mines N. S.; SP—Same; RR—Intercolonial.
MS—G. W. Greenwell, Sydney Mines, N.S.
S of H—Endless rope; track gauge 30 in.
S of M—10 Comp. air mach.
PP—8 Babcock & Wilcox water tube boilers, total 2400 H. P., 2 comp. 1 pump.
EMP—600. Coke Ovens, 30 Banner type. Last fiscal year output 200,000 tons.

Lloyd No. 2 Mine; Slope; Lloyd Cove Seam, 6 ft. thick.
PO—Sydney Mines, N. S.; SP—Same; RR—Intercolonial.
MS—Duncan G. McDonald, Sydney Mines, N. S.
S of H—Endless rope.
S of M—35 Comp. air mach.
PP—Power from Princess Mine.
EMP—350. Last fiscal year output 150,000 tons.

Florence No. 3 Mine; Slope; Old Sydney Seam, 6 ft. thick.
PO—Florence, N. S.; SP—Same RR—Intercolonial.
MS—Angus Ferguson, Florence, N. S.
S of H—Endless rope; track gauge 30 in.
S of M—50 Comp. air mach.
PP—6 Stirling water tube boilers, total 1500 H. P., 2 comp., 1 pump.
EMP—500. Last fiscal year output 250,000 tons.

Scotia No. 4 Mine; Old Sydney Seam, 6 ft. thick.
PO—Little Bras d' Or, N. S.; SP—Same; RR—Intercolonial.
MS—Wm. Tobin, Little Bras d' Or., N.S.
S of H—Rope; track gauge 30 in.
S of M—30 Elec. mach.
PP—Gen. unit 250 volts D. C., 3 phase, 60 cycle power from Blast Furnace Plant.
EMP—400. Last fiscal year output 200,000 tons.

Queen No. 5 Mine; Shaft; Old Sydney Seam, 6 ft. thick.
PO—Sydney Mines N. S.; SP—Same; RR—Intercolonial.
MS—Robert Robertson, Sidney Mines. N.S.
S of H—Endless rope; track gauge 30 lb.
S of M—Hand.
PP—3 Return tubular boilers, total 300 H. P.
EMP—300. Coke ovens, 90 Bernard type. Last fiscal year output 120,000 tons.

Inbillee No. 6 Mine; Shaft; Greener Seam, 5 ft. thick.
PO—Sydney Mines N. S.; SP—Same; RR—Intercolonial.
MS—Robert Robertson, Sidney Mines. N.S.
S of H—Elec. loco. and endless rope; track gauge 30 in.
S of M—5 Elec. mach.
PP—Power from Central Plant at Blast Furnaces.
EMP—100. Last fiscal year output 50,000 tons.

PACIFIC COAST COAL MINES, Ltd.
General Office, Victoria, B. C.
PR—John H. Tonkin, Victoria B. C.
GM—John H. Tonkin, " "
TR—Talbot Schmuck.....Victoria, B. C.
PA—Talbot Schmuck.....Victoria, B. C.
MM—J. C. McGregor, S. Wellington, B. C.
South Wellington Nos. 1, 2, 3 and 4 Mines; Slope and Shaft; Douglas Seam, 4 to 30 ft. thick; operate washery.
PO—South Wellington, B. C.; SP—68 Mile Post, B. C.; RR—E. & N.
MS—Robt. Bonar...S. Wellington, B. C.
S of H—2 Steam loco. and rope; track gauge 36 in.
S of M—1 Comp. air mach.
PP—8 Return tubular boilers total 1200 H. P., 3 gen. units 440 A. C., 3 phase, 60 cycles.
EMP—600.

Suquash Nos. 1 and 2 Mines; Seam 3½ ft. to 4 ft. 3 in. thick.
PO—South Wellington, B.C. SP—Suquash, B. C.
At present in state of development.

PACIFIC COAST COLLIERY CO.
General Office, Minneapolis, Minn.
Nos. 2 and 3 Mines; Shaft and Drift, Nos. 1 and 2 Seam, 5 to 30 ft. thick.
PO—Merritt, B. C.; SP—Same; RR—C. P. Ry.
PR—J. C. Anderson..Minneapolis, Minn.
GM—Howell John.....Merritt, B. C.
MS—Howell John " "
CE—W. E. Duncan, " "
S of H—Steam and rope.
S of M—Hand.
PP—3 Boilers, 2 gen. units, 1 pump
EMP—23. Last fiscal year output 1485 tons.

PACIFIC PASS COAL FIELDS, Ltd (THE)
General Office, Montreal, Que.
Controls 40,000 acres of coal lands.
PR—E. B. Greenshields, Montreal, Que.
VP—Hon. Robert Mackay, " "
TR—Samuel T. Mains, " "
GM—P. Christianson....Fergie, Alta.
PP—5 Boilers, total 150 H. P. tipple capable of handling 1,000 tons per day.

PEMBINA COAL CO, LTD.
Shaft Mine; Seam, 72 to 90 in. thick.
PO—Evansburg, Alta; SP—Same; RR—Grand Trunk Pac., Can. Nor.
PR—H. M. Evans.....Evansburg, Alta
GM—M. L. Hyde, " "
PA—M. L. Hyde, " "
MM—H. Pallott, " "
EE—F. Raymond, " "
MS—S. D. Wark, " "
S of H—2 Elec and 2 Storage Batteries, loco.
S of M—4 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—120.

PIONEER COAL CO.
Pioneer Mine, Shaft, Tofield Seam 6 to 9 ft. thick.
PO—Tofield, Alta.; SP—Same; RR—Grand Trunk Pacific.
GM—J. J. McDevitt,....Tofield, Alta.
S of M—Hand.
PP—Boiler 20 H. P., 1 pump.
EMP—12 to 24. Last fiscal year output 4,000 tons.

PRAIRIE COAL CO., Ltd.
Bow City Mine; Drift; Seam 60 to 63 in. thick.
PO—Eyremore, Alta.; SP—Brooks, Alta.; RR—Canadian Pacific Ry.
PR—A. Casey, Esq., Drawer 180, Regina, Sask.
TR—C. R. Westgate....Eyremore, Alta.
GM—C. R. Westgate, " "
MS—John Barr, Esq., " "
S of H—Mules.
PP—1 Pump.
EMP—10. Last fiscal year output 5,000 tons.

PRINCETON COAL & LAND COMPANY Ltd
General Office, London, England.
No. 1 Mine, Slope; Yale Mine Seam; 24 ft. thick, top 9 ft., worked.
PO—Princeton, B. C.; SP—Same; RR—Great Northern.
GM—Ernest Waterman, Princeton, B. C.
MS—Francis Glover, " "
EM—Francis Glover, " "
MM—Homer Wells, " "
S of H—Direct rope haulage.
S of M—5 comp. air mach.
PP—1 Air comp.; 1 pump.
Sales Agent, G. H. Whitemass Princeton, B. C.

REDCLIFF BRICK & COAL COMPANY, Ltd
No. 1 Mine Redcliff, Drift; Lignite Seam; 4 ft. 10 in. to 5 ft. thick.
PO—Redcliff, Alta.; SP—Same; Prov. Alberta; RR—C. P. R., Main Line.
PR—Dr. C. H. Kohler, Minneapolis, Minn.
TR—H. M. Owens, " "
GM—E. H. Sellhorn....Redcliff, Alta.
GS—E. H. Sellhorn, " "
PA—E. H. Sellhorn, " "
MS—Robt. Hamilton, " "
EM—Robt. Hamilton, " "
MM—O. J. Wetter, " "
S of H—Rope and horses; track gauge 30 in.
S of M—Hand.
PP—2 Return tubular boilers, 2 gen. units.
Last fiscal year output 8,260 tons.

RED DEER VALLEY COAL CO., LTD. ..
Red Deer Valley Mine; Shaft; Sub-Bituminous Seam, 108 to 112 in. thick.
PO—Drumheller, Alta.; SP—Same; RR—Canadian Northern.
PR—Slocum Howland..Drumheller, Alta.
TR—Slocum Howland, " "
MS—D. A. Macaulay " "
EM—D. A. Macaulay, " "
S of H—Mules.
S of M—Hand.
PP—2 Jenckes boilers, total 300 H. P.; 2 pumps. Output, 200 tons per day.

REID HILL COLLIERY.
Reid Hill Mine, Drift, Lignite Seam 2½ ft. thick.
PO—Reid Hill, Alta.; SP—Vulcan; RR—C. P. R.
PR—J. W. Brown.....Reid Hill, Alta.
GM—Charles Bostock....Reid Hill, Alta.
S of H—Rope; rack gauge 39 in.
S of M—Hand
EMP—4. Last fiscal year output 600 tons.

ROBINSON, W.
Robinson Mine, Shaft; Seam 7 to 9 ft. thick.
PO—Duxburg Alta.; SP—Strome, Alta., RR—Wetaskiwin.
MS—W. Robinson.....Duxburg, Alta.
S of H—Track gauge 22 in.
S of M—Hand.

ROCK SPRINGS COAL & BRICK CO., Ltd
"Tunnel" or Drift Mine; "Belly River" Seam 34 to 38 in. thick.
PO—Taber, Alta.; SP—Same; RR—C. P. R., Elcan Blast Spur Br.
PR—B. K. Bullock.....Taber, Alta.
TR—A. L. Bullock.....Taber, Alta.
Secy—A. L. Bullock.....Taber, Alta.
PA—C. C. Cook.....Elcan, Alta.
MS—C. C. Cook.....Elcan, Alta.
GM—R. J. Lee.....Elcan, Alta.
MGR—Robt. John Lee.
CE—E. S. F. Huntrods....Taber Alta.
EM—A. B. Cook, " "
MM—Herbert Lamb.....Elcan, Alta.
S of H—Mules and horses; track gauge 30 in.
S of M—9 comp. air mach.
PP—2 Polson, and 1 John Abell, Return tubular boilers, loco. type, total 400 H. P., 1 comp., 1 pump.
EMP—60. Last fiscal year output 25,000 tons.
Sales Agent, Harstone Bros, Winnipeg, Man. Canada and McLean Coal Co. Moose Jaw, Sask.

ROUND HILL COLLIERIES, Ltd.
PO—Round Hill, Alta.
No report.

ROSEBY FARMING & DEV. CO.
Brunner Mine, Lignite Seam 3 ft. thick.
PO—Rosebud Creek, Alta.; SP—Same; RR—C. N. R.
GM—R. W. Brunner, Rosebud Creek, Alta.
GS—R. W. Brunner, " "
MS—John Drenskis, " "
S of H—Hand; track gauge 2½ ft.
S of M—Hand.

ROSEDALE COAL & CLAY PRODUCTS CO., LTD.
Mine No. 1 and 2, Drift, No. 1, Shaft No. 2; Upper and Lower Seam; 3 ft. 8 in. to 11 ft. thick.
PO—Rosedale Alta.; SP—Moodie's Siding, Alta. RR—C.N.R., Goose Lake, Br.
PR—W. Georgeson ....Calgary, Alta.
TR—W. Carson, " "
GM—J. F. Moodle.....Rosedale, Alta.
MS—J. F. Moodle, " "
SM—W. R. Fulton, " "
MM—K. Moodie, " "
EE—K. Moodie, " "
CE—B. W. Dunn.....Calgary, Alta.
EM—B. W. Dunn, " "
S of H—Mules Will have elec. and comp air locos.
S of M—Hand.
PP—1 Boiler, 1 pump.
EMP—60. Last fiscal year output 27,000 tons.
Sales agent, Great West Coal Co., Brandan, Man., J. R. Brodie.

ROSE DEER COAL MNG. CO., LTD. (THE)
General Office, Galgary, Alta.
Controls 6,060 acres Slope Mine; Seam 60 to 84 in. thick.
PO—Wayne, Alta; SP—Drumheller, Alta; RR—Canadian Northern.
PR—Vital Raby.....Calgary, Alta.
TR—Chas. S. Smith..Saskatoon, Sask.
GM—Geo. V. Tupper....Drumheller, Alta
MS—Jas. Hargraves.....Wayne, Alta.
S of H—Steam Hoist.
S of M—1 Comp. air machine.
PP—1 Boiler, 48 H. P. and 1 Air comp.
EMP—40. Last fiscal year output 6,450 tons.

ROTHWELL COAL CO., LTD.
Rothwell Mine, Shafts; Seam 17 to 24 in. thick.
PO—Rothwell, N. B.; SP—Minton, N. B.; CTY—Queens; RR—C. P. R.
PR—H. C. Schofield, St. John, N. B.
GS—W. B. Evans.....Rothwell, N. B.
S of M—Hand.

ROYAL COAL CO.
Rivedside Mine, Slope, Lawson and Station Seams 3½ to 5 ft. thick.
PR—John T. Smith....Amherst, N.S
TR—C. R. Smith, " "
S of H—Comp. air.
S of M—Hand.
PP—2 Babcock & Wilcox water tube boilers, total 500 H. P.

ROYAL COLLIERIES CO., LTD.
PR—A. C. Flumerfelt, Royal View, Alta.
VP—A. Laidlaw, " "
GM—H. N. Galer, " "
MS—E. Proctor White, " "

ST. ALBERT COLLIERIES, LTD.
General Office, Montreal, Que.
PR—E. B. Greenshield, Montreal Que.
VP—H. A. Lovett, " "
SECY—G. F. Gyles, " "
GM—Chas. Fergle....St. Albert, Alta.
MS—E. Ashburner, " "

SEATON COAL CO., LTD. (THE)
General Office, 418 Leo Bldg., Vancouver, B. C.
Seaton Mine, Developing by Slope working Seam 2 to 6 ft. thick.
PO—20 Mile House, East Hazelton, B. C.; SP—Seaton.
PR—D. Mulholland....Van Couver, B. C.
TR—A. E. Young, " "
GM—James Wright. " "
Only for testing purposes up to present time.

STERLING COAL CO.
PO—Drumheller, Alta.
No report.

STRATHCONA COAL CO.
General Office, Moncton, N. S.
Not operating at present, March 1, 1914.

SUPERIOR COAL CO., LTD.
Nos. 1 and 2 Mines; Drift; Belly River Seam, 4 ft. to 4 ft. 4 in. thick.
PO—Taber, Alta; SP—Same; RR—C. P. R.
PR—B. K. Bullock .... Taber, Alta.
PA—H. Y. Parker.....Taber, Alta.
GM—H. Y. Parker .....Taber, Alta.
MS—H. Y. Parker.....Taber, Alta.
TR—C. L. Parker.....Taber, Alta.
MM—Robert John Lee, " "
EM—A. Stokes.....Taber, Alta.
MM—Awrey Rice....Mericine Hat, Alta.
S of H—Mules and horses; track gauge 30 in.
S of M—6 Comp. air mach.
PP—1 Babcock & Wilcox boiler, 200 H. P.
EMP—50. Last fiscal year output 12,000 tons.

SYDNEY COAL CO.
General Office, 10 Fremont S., Boston, Mass.
Indian Cave Mine Slope Indian Cave of No. 3 Seam, 5 ft. thick.
PO—Sydney Mines, C. B.;
PR—Samuel C. Bennett, 10 Fremont St., Boston, Mass
TR—Edward M. Beals, " "
GM—Hugh G. Campbell, North Sydney
MS—Hugh G. Campbell, " "
PP—1 Return tubular boiler, 25 H. P.
S of H—Rope; track gauge 3 ft.
S of M—Hand.
EMP—25. Last fiscal year output 8,000 tons.

TOFIELD COAL CO., LTD.
General Office, Edmonton, Alta.
Tofield Mine; Stripping; Seam, 72 to 120 in. thick.
PO—Tofield, Alta.; SP—Same; RR—Tofield, Calgary Br.
PR—Robert Lee.....Edmonton, Alta.
TR—Claude Gallinger, " "
GM—Claude Gallinger, " "
MM—Wm. J. Morton.....Tofield, Alta.
S of H—Mules.
S of M—Hand.
PP—2 Pumps.
EMP—52. Last fiscal year output, 22,551 tons.

TWIN CITY COAL CO., LTD.
Twain City Mine, Shaft, Lignite Seam, 60 to 81 in. thick.
PO—Edmonton, South; Alberta; SP—Same; RR—C. N. R.
PR—R. L. McIntyre.....Toronto, Ont.
TR—J. Sinclair, "
GM—J. A. Marden.....Toronto, Ont.
Asst. GM—H. C. Anderson, Edmonton, Alta.
EM—J. B. de Hart.
S of H—Mules; track gauge 24 in.
S of M—6 Comp. air mach.
PP—1 Water tube and 1 Return tubular boilers, total 180 H. P., 2 comp., 1 pump.
EMP—100. Last fiscal year output 40,300 tons.

UNION COAL CO.
Union Mine; Shaft, 63 to 69 in. thick.
PO—Three Hills, Alta; SP—Same; RR—Grand Trunk Pac., Tofield Br.
PR—Clarence F. Smith, Montreal, P. Q.
TR—F. Baylis, " "
GM—Alex McCullough....Calgary, Alta.
PA—Alex McCullough, " "
MS—James Crowder..Three Hills, Alta.
CE—H. E. Coll.....Edmonton, Alta.
S of H—Mules. Track gauge 36 in.
S of M—3 Comp. air mach.
PP—2 Return tubular boilers, total 125 H. P., gen. unit, 1 compressor, 2 pumps.
EMP—10 to 20. Last fiscal year output 10,000 tons.
Sales Agency, Alex McCoullough, Calgary.

UNITED EMPIRE CO., LTD.
United Empire Mine; Drift; Lignite Seam, 48 to 108 in. hick.
PO—Princeton, B. C.; SP—Same; RR—G. Nor., Kettle Valley Br. of Can. Pac.
PR—W. C. McDougall..Princeton, B. C.
GM—W. C. McDougall, " "
TR—E. G. Marston....Spokane, Wash.
GS—E. P. Gaillac, " "
EM—J. V. Richards, " "
S of H—Mules.
S of M—Hand.

VANCOUVER-NANAIMO COAL CO., LTD.
General Office, Pacific Bldg., Vancouver, B. C.
East Wellington No. 1 Mine; Slope; Wellington Seam, 36 to 180 in. thick.
PO—Box 834 Nanaimo, B. C.; SP—Same; RR—E. & N., Newcastle Br.
PR—H. W. Maynard..Vancouver, B. C.
GM—H. W. Maynard, " "
TR—J. L. G. Akhatt, " "
GS—H. N. Freeman, Nanaimo, B. C.
EM—H. N. Freeman, " "
MM—H. Heimer, " "
S of H—I Steam loco. and mules; track gauge 56 1-2 in.; underground rack, 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 321 H. P., gen. unit, 120 volts D. C., 2 compressors, 5 pumps.
EMP—180. Last fiscal year output, 119,840 tons.

VULCAN COAL CO., LTD.
General Office, Calgary Alta.
Drift, Edmonton Seam.
PO—Drumheller, Alta. SP—Same. RR—Canadian Northern.
PR—A. J. Sayre.....Calgary, Alta.
TR—E. R. Mosher, " "
Mine not operating

WALKER, JAS.
Walker Mine, Slope; "Lignite" Seam, 10 to 14 ft. thick.
PO—Sheerness, Alta.; SP—Rickdale, Alta.; RR—C. N. R.
PR—James Walker....Sheerness, Alta.
GM—James Walker, " "
MS—Julius Weruebold " "
EM—Smith & Cote, " "
S of H—Rope; track gauge 26 in.
S of M—Hand.
PP—Frost Boiler, total 35 H. P., 1 gen. unit, 1 pump.
Last fiscal year output 6,000 tons.

WEST CANADIAN COLLIERIES, Ltd.
Blairmore, Lille, Bellevue and Greenhill Mines; Operate Washery.
PO—Blairmore, Alta; SP—Same and Hillcrest; RR—C. P., Crows Nest Pass Branch.
PR—A. Wicart, ...Lille, France
GM—J. Charbonnier, Blairmore, Alta.
GS—R. Green, ..." "
S of H—8 Comp. air mach; track gauge 36 in.
S of M—Hand.
PP—Boilers, 1,200 H.P., gen. unit 2,300 volts A.C., 2 compressors.
Coke ovens—50 Rectangular.

WESTERN COAL & COKE CO., LTD.
See Canadian Coal & Coke Co., Ltd.

WESTERN FUEL CO.
General Office, San Francisco, Cal.
No. 1, Northfield and Reserve Mines; Shafts; Douglas and New Castle Seams, 54 to 300 in. thick.
PO—Nanaimo, B.C.; SP—Same; RR—E. & N., C. P., G. N.
PR—John Lawson, San Francisco, Cal.
TR—C. E. Schmitt, " " "
GM—Thos. R. Stockett, Nanaimo, B.C.
GS—Thos. R. Stockett, " "
PA—W. J. Pollock, " "
MS—John Hunt, " "
EM—J. F. Hepburn, " "
MM—A. G. Hamilton, " "
EE—J. G Harrison, " "
S of H—6 Elec., 5 steam loco., track gauge 30 and 56½ in.
S of M—55 Comp. air mach.
PP—3 Water tube, 26 return tubular boilers, total 3,000 H.P., 6 compressors, 3 pumps.
EMP—1,000. Last fiscal year output 340,000 tons.

WHITE ASH COLLIERIES, LTD.
Slope Seam, 48 in. thick.
PO—Taber, Alta. SP—Same. RR—C.P. R.
PR—W. E. Bullock, ... Taber, Alta.
GM—W. E. Bullock, " "
PA—W. E. Bullock, " "
VP—Roy Bullock, " "
TR—W. Lowe.....Taber, Alta.
MS—John Marsh, " "
CE—E. S. F. Huntroids, " "
EM—E. S. F. Huntroids, " "
MM—W. Doncumbe, " "
EE—W. Doncumbe, " "
S of H—Mules. Track gauge, 30 in.
S of M—6 Compressed Air Machines.
PP—Leonard boilers, total 300 H. P., 1 Air comp., 2 pumps. Sales agent, Jas. Budd, Taber, Alta.

YELLOWHEAD PASS COAL & COKE CO. LTD.
General Office,..... Montreal, Que.
PR—M. J. O'Brien " "
VPR—M. Doheny, " "
TR—F. W. Rous, " "
GM—Donald McKay....Bickerdlke, Alta.
MS—F. B. Smith, " "
MM—H. Ryan, " "
Control 8,515 acres of land. Tipple capacity 500 tons per day.

COLORADO

For List of Abbreviations See Page 498.

ALLIANCE COAL CO.
General Office, Denver, Colo.
Reliance Mine, Slope; Seam 8 to 11 ft. thick.
PO—Ojo, Colo.; SP—Same; CTY—Huerfano. RR—D. & R. G.
PR—D. A. Cannon....Denver, Colo.
PA—D. A. Cannon, " "
MS—John McDowell.....Ojo, Colo.
S of H—Mules and rope.
S of M—Hand and 3 comp. air mach.
PP—4 Water tube boilers total 450 H. P.; 1 air comp.; 4 pumps.
EMP—100. Last fiscal year output 79,230 tons
Sales Agent, G. R. Houghtelin.

LTA FUEL CO.
PO—Brodhead, Colo.
Ceased operating Sept. 23rd, 1913 and will not resume until better conditions prevail.

AMADOR COAL COMPANY.
Amador No. 1 Mine, Drift; Semi-Bituminous Seam; 30 to 38 in. thick.
PO—Aguilar, Colo.; SP—Same; CTY—Las Animas; RR— C. & S.
PR—A. E. Woodward....Ludlow, Colo.
TR—S. C. Clarke.....Trinidad, Colo.
GS—John Allan.....Aguilar, Colo.
MS—John Snedden, " "
EM—Danford & Sanderson, Tinidad, Colo.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—14. Last fiscal year output 8,345 tons.

AZTEC COAL MINING CO.
Tobin Mine
PO—Walsenburg, Colo.; CTY—Huerfano.
No report

BALDY COAL COMPANY, THE
Baldy Mine; Drift; Watson Seam, 5 to 7 ft. thick.
PO—Trinidad, Colo.; SP—Same; CTY—Las Animas.
PR—E. P. Shuman,...Trinidad, Colo.
GM—W. O. Shuman, " "
PA—W. O. Shuman, " "
CE—Danforth & Douglass..Trinidad, Colo.
MS—E. P. Shuman.....Trinidad, Colo.
S of H—Mules and rope; track gauge 3 ft.
S of M—Hand.
PP—Power purchased.
EMP—15. Last fiscal year output 7,00 tons.

BALDWIN FUEL CO.
Baldwin Mine; Slope; 72 to 96 in. thick.
PO—Gunnison, Colo.; SP—Cooper Spur, Colo.; CTY—Gunnison; RR—D. & R. G.
PR—H. E. McElwain, Gunnison, Colo.
TR—Jas. Gledlartz, " "
GS—C. A. Partch, " "
New operation, capacity, 200 tons daily.

BEAR CANON COAL CO., (THE)
General Office, Trinidad Colo.
Bear Canon Mine, Drift, "Camron" Seam; 3 ft. 8 in. to 4 ft. 10 in. thick.
PO—Toller, Colo.; SP—Same; CTY—Las Animas. RR—C. & S., Berwind Br.
PR—J. J. J. Abercrombie, Trinidad, Colo.
GM—J. J. J. Abercrombie, " "
GS—J. J. J. Abercrombie, " "
PA—J. J. J. Abercrombie, " "
TR—P. D. Miller, Iowa City, Iowa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
Sales Agent, J. J. J. Abercrombe, Trinidad, Colo.

BEAR RIVER COAL CO.
General Office, Denver, Colo.
Bear River Mine; Slope; Pinnacle Seam, 109 to 168 in. thick.
PO—Bear River, Colo.; SP—Same; CTY—Routt; RR—D. & S. L.
PR—Geo. N. Sparling....Denver, Colo.
TR—W. T. Mayfield, "
MS—J. R. Fleming, Bear River, Colo.
SCO—Bear River Merc. Co., Bear River, Colo.
S of H—Rope; track gauge, 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 250 H. P., 1 pump.
EMP—27. Output from July, 3,553 tons. New company.

BIG FOUR COAL & COKE CO., (THE)
General Office, Denver, Colo.
PR—P. M. Peltier.....Denver, Colo.
TR—L. B. Cannon, "
GM—L. B. Cannon " "
PA—L. B. Cannon, " "
Sales Agent, W. J. Richardson, Denver, Colo.

Big Four Mine; Slope; Robinson Seam, 4½ to 9 ft. thick
PO—Tioga, Colo.; SP—Same; CTY—Huerfano; RR—D. & R., G., C. & S.
MS—M. W. Padfield.....Tioga, Colo.
S of H—Rope and gasoline loco.; track gauge 36 in.
S of M—12 Sullivan, comp. air mach. and 2 Elec. mach.
PP—5 water tube boiler, total 750 H. P., 2 comp. and 2 pumps.
EMP—80. Last fiscal year output 50,000 tons.

Centennial Mine; Shaft; Louisville Seam 5 ft. thick.
PO—Louisville Colo.; SP—Same; CTY—Boulder; RR—C. & S.
MS—H. B. McFadden, Louisville, Colo.
S of H—Mules, rope and gasoline loco.; track gauge 36 in.
S of M—1 Comp. air mach. and hand.
PP—3 Heine, Kewance water tube boilers, 1 Norwalk comp., 2 pumps.
EMP—70. Output for six months, 20,000 tons

BIG SIX COAL CO.
Sunnyside Mine, Shaft, Lignite Seam 3 ft. 8 in. to 4 ft. 11 in. thick.
PO—Louisville, Colo., SP—Same; CTY—Boulder; RR—Colo. & Sou.
PR—Louis Gutfelder Jr., Louisville, Colo.
TR—G. A. Dalby, " "
GM—J. A. Carveth, " "
PA—J. A. Carveth, " "
MS—F. N. Carveth, " "
SCO—Carveth Bros. & Dalby; SB—G. A. Dalby.
S of H—Mules; track gauge 30 in.
S of M—Hand and 4 comp., air mach.
PP—3 H. & B. boilers, total 300 H. P., 1 American and 1 Ing-Sergeant air comp., 1 Cameron pump.
EMP—40. Last fiscal year output 29,657.65 tons.
Sales Agent, J. A. Carveth, Louisville, Colo.

BLACK CANNON FUEL CO.
General Office, Denver Colo.
Caddell Mine, Slope, Robinson Seam 3½ to 4 ft. thick.
PO—Walsenburg, Colo.; SP—Caddell; CTY—Huerfano; RR—D. & R. G., C. & S.
PR—John Q. Royce....Denver, Colo.
GM—John Q. Royce, " "
PA—John Q. Royce, " "
TR—Talton F. Crane....Denver, Colo.
MS—Robert Curry, Walsenburg, Colo.
S of H—Rope; track gauge 3 ft.
S of M—Hand and 2 Sullivan elec. mach.
PP—1 Elec. hoist, 2 gen. units 440 volts A. C., 3 cycles. Power purchased.
EMP—80. Last fiscal year output, 41,000 tons.

BOOK CLIFF R. R. CO., (THE)
Book Cliff Mine, Drift; Seam 14 ft. work 7 ft.
PO—Grand Junction, Colo.; SP—Same, CTY—Mesa.; RR—The Book Cliff.
PR—John W. Raymond, Grand Junc. Colo.
TR—W. S. Phillips, " "
GM—W. S. Phillips, " "
PA—W. S. Phillips, " "
MS—T. E. Sanford, " "
SM—T. E. Sanford, " "
MM—C. F. Loss, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.

BREEN COAL MINING CO., THE
Breen Mine, Slope; Walsen Seam, 60 to 72 in. thick.
PO—Walsenburg, Colo.; CTY—Heurfano, RR—Colo. & Southern, D.&R.G.
PR—John P. Breen..Walsenburg, Colo.
PA—Martin T. Brennan, " "
GM—Martin T. Brennan, " "
S of H—Electric hoists; track gauge 3 ft.
S of M—2 Elec. mach.
PP—Purchase power.
EMP—35. Last fiscal year output 19,-131 tons.
Sales Agent, Colo. Fuel & Iron Co.

BROOKS-HARRISON FUEL CO., THE
Nonpareil Mine, Shaft; Seam 60 to 108 in. thick.
PO—Louisville, Colo.; SP—Same; CTY—Boulder; RR—C. & S.
PR—James E. Brooks, Louisville, Colo.
TR—James E. Brooks, " "
GM—James E. Brooks, " "
PA—James E. Brooks, " "
EM—Geo. E. Wilson....Boulder, Colo.
MS—A. Viggers.....Louisville, Colo.
MM—A. Viggers.....Louisville, Colo.
S of H—Mules; track gauge 36 in.
S of M—3 Comp. air mach.
PP—3 Boilers, toal 300 H P., 3 comp., 3 pumps.
EMP—25. Last fiscal year output 23,-000 tons.
Sales Agent, James E. Brooks.

BROOKSIDE COAL MINING CO.
Brookside Mine, Semi-Bituminous, Seam 6 ft. thick.
PO—Canon City, Colo.; SP—Same; CTY—Fremont; RR—A. T. & S. F.;
PR—John Lippis....Canon City, Colo.
GM—John Lippis.....Canon City, Colo.
MS—John Lippis, " "
TR—Uboldi Moschetti, " "
MM—Ronco Moschetti, " "
EE—Bud Holland, " "
EM—J. Q. McNatt.....Pueblo, Colo.
S of H—Elec. loco.
S of M—1 Elec. mach.
PP—2 Boilers, 1 gen. unit 250 volts D. C., 1 pump.
EMP—13. Lat fiscal year output 9,489 tons.

CALUMET FUEL CO., THE
General Office, 514 Equitable Bldg., Denver, Colo.
Perins Peak Mine, Drift; 5 ft. thick.
PO—Perins, Colo.; SP — Durango, Colo.; CTY—La Plata.; RR—Rio Grande Southern, Calumet Br.
PR—A. H. Cowie, Judge Bldg., Salt Lake, Utah.
TR—E. R. Dickenson....Denver, Colo.
GS—W. C. Ferguson, " "
PA—W. C. Ferguson " "
MS—M. T. Lomason.....Perins, Colo.
SM—John Meston, " "
MM—M. T. Lomason, " "
S of H—Elec.; track gauge 3 ft.
S of M—Hand.
PP—Purchase power.
EMP—95. Last fiscal year output 63,287 tons.
Sales Agent, W. C. Ferguson, Denver, Colo.

CANON COAL & DEVELOPMENT CO.
Diamond Mine.
PO—Canon City, Colo.; CTY—Fremont.
No report.

CARBON COAL AND COKE CO.
General Office, Denver, Colo.
PR—L. G. Elkins.....Denver, Colo.
GM—L. G. Elkins, " "
TR—W. A. Johnston, " "
CE—F. D. Baker " "
PA—A. G. Bown, " "
GS—D. D. Dodge....Cokedale, Colo.
EM—H. H. Bubb, " "
MM—R. B. West, " "
EE—G. V. Hughes, " "
SCO—Gottlieb Merc. Co., " "

Cokedale Mine; Slope; Seam 4 to 7ft. thick; washery
PO—Cokedale, Colo.; SP—Same; CTY—Las Animas; RR—D. & R. G.
S of H—4 Elec. loco. and mules
S of M—Elec. mach. and hand.
EMP—400 Coke ovens 350 Bee Hive. Last fiscal year output 325,000 tons.

San Juan Mine; Slope; Seam 3 to 5 ft. thick.
PO—Durango, Colo.; SP—Same; CTY—San Juan; RR—D. & R. G.
MS—F. C. Gilbert.....Durango, Colo.
S of H—Rope.
S of M—Hand.
EMP—30. Coke ovens, 14 Bee Hive. Consume own coal.

CARBONADO COAL MINING CO.
General Office, First National Bank Bldg., Denver, Colo.
Carbonado Colliery; Slope and Shaft
PO—Maitland, Colo.; SP—Carbonado, Colo.; CTY—Huerfano, RR—D. & R. G.
GM—John B. Hutchinson, Denver, Colo
MS—R. T. Bell, ...Maitland, Colo.
S of H—Elec. loco.
EMP—50.

CEDAR HILL COAL & COKE CO.
General Office, Denver, Colo.
PR—D. M. Harrington..Denver, Colo.
GM—D. M. Harrington " "
PA—D. M. Harrington, " "
TR—J. M. Anderson, " "
GS—Robt. O'Neil.....Trinidad, Colo.
CE—M. O. Danford....Trinidad, Colo.
MM—V. V. Patton...Tollerburg, Colo.
EE—V. V. Patton, " "
Sales Agent, D. M. Harrington, Denver, Colo.

Black Diamond Mine, Slope; "Cameron" Seam; 3 to 4 ft. thick.
PO—Rapson, Colo.; SP—Rugley, Colo.; CTY—Las Animas; RR—C. & S.
MS—H. F. Tennant, Tollerburg, Colo.
S of H—Rope and Mules; track gauge 36 in.
S of M—Hand.
PP—3 Water tube boilers, total 140 H.P.
EMP—60.

Toller Mine Shaft; "Berwind" Seam; 5½ to 8 ft. thick.
PO—Tollerburg, Colo.; SP—Toller, Colo.; CTY—Las Animas; RR—C. & S.
MS—H. F. Tennant, Tollerburg, Colo.
S of H—Rope and Mules; track gauge 36 in.
S of M—Hand.
PP—2 Erie water tube boilers, total 200 H. P., 440 volts, A C., 3 phases, 60 cycles; elec. power purchased, 1 pump.
EMP—200.

Greenville Mine, Slope;"Berwind" Seam, 5 to 8 ft. thick.
PO—Ludlow, Colo.; SP—Tabasco, Colo.; CTY—Las Animas; RR—C. & S.
MS—H. F. Tennant, Tollerburg, Colo.
S of H—Rope and Mules; track gauge 40 in.
S of M—Hand.
PP—3 Water tube boilers total 150 H. P., 440 volts, A. C. 3 phases, 60 cycles; elec. power purchased.
EMP—105.

CENTENNIAL COAL CO.
See Big Four Coal Co.

CHICOSA FUEL CO.
General Office, Foster Bldg., Denver, Colo.
Forbes Mine, Slope; "Hastings" Seam; 4 to 8 ft. thick.
PO—Forbes, Colo.; SP—Forbes Junction, Colo.; CTC—Las Animas; RR—C. & S.
PR—D. W. Brown.....Denver, Colo.
TR—J. J. Roche " "
GS—Geo. T. Peart, " "
PA—G. A. Easterly, " "
MS—Robt. Nichol.....Forbes, Colo.
SM—K. E. Cowdery, " "
EM—Ralph Shumway....Denver, Colo.
EE—John Hawthorne..Lafayette, Colo.
SCO—Rocky Mountain Stores Co., Buyer, E. Horstman, Denver, Colo.
S of H—Rope and mules; track gauge 36 in.
S of M—Hand and 1 elec. mach.
PP—1 Return tubular boiler total 75 H. P.. 250 volts D. C., 4 pumps.
GM—Asst. R. J. Matteson, " "
EMP—100.
Sales Agent, N. C. Brooks, Denver, Colo.

COLORADO CAPITAL COAL MINING CO.
Capitol Mine, Shaft; Seam, 3½ to 7 ft. thick.
PO—Lafayette, Colo.; SP—Same; CTY—Boulder; RR—C. B. & Q.
S of H—Mules; track gauge 3 ft.
S of M—7 Comp. air mach.
PP—3 Return tubular boilers total 330 H. P.; 1 air comp.; 2 pumps.
EMP—125. Output from Jan 1 to Mar. 15, 1913, 15,130 tons.
Note—Mine not operating at present.

COLORADO CENTRAL COAL & MINING CO.
PO—Pueblo, Co.
No report.

COLORADO FUEL & IRON CO. (THE)
General Office, Denver Colo.
27 Mines, 8 coke oven plants.
PR—J. F. Welborn.....Denver, Colo.
TR—J. A. Writer.....Denver, Colo.
PA—S. G. Pierson, " "
GM—E. H. Weitzel.....Pueblo, Colo.
EM—E. H. Weitzel, " "
GM—Asst B. J. Matteson, " "
MM—B. J. Matteson, " "
EE—Geo. S Thompson....Pueblo, Colo.
Asst 1st Div.—J. P. Thomas Trinidad, Colo.
Mine Inspector—Robert McAllister Trinidad, Colo.
Boiler Inspector—W. S. Thomas, Trinidad, Colo.
Supt. of Washeries—F. C. Miller, Trinidad, Colo.
SM—Colorado Supply Co., Buyer, S. G. Pierson, Denver, Colo.
Sales Agent, J. Chilberg, Denver, Colo.

Cornell Mine; Slope; Seam 9 ft. thick.
PO—Tercio, Colo.; SP—Same; CTY—Las Animas; RR—Colo. and Wyoming.
MS—John Shaw.....Tercio, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler 80 H.P. 1 pump.

Engle Mine, Drift; Seam 66 in. thick.
PO—Engle, Colo.; SP—Engleville, Colo. CTY—Las Animas; RR—D.&R.G.
S of H—1 Steam loco and mules and rope; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers, total 450 H. P.

Floresta Mine; Drift; Seam, 3½ ft. thick.
PO—Floresta, Colo.; SP—Crested Butte, Colo.; CTY—Gunnison; RR—D. & R. G., Floresta Br.
MS—Wm. Manley..Crested Butte, Colo.
SM—M. B. Moscon.....Floresta, Colo.
S of H—2 Gasoline loco., mules and rope; track gauge 36 in.
S of M—Hand.
PP—1 Water tube, 3 return tubular boilers, total 375 H. P., 1 lighting plant, 110 volts D. C., 1 air comp.
EMP—156. Last fiscal year output 58,669 tons.

Marion Mine; Drift; Seam, 6 ft. thick.
PO—Gulch, Colo.; SP—Marion, Colo.; CTY—Pitkin; RR—Colo. & Midland.
MS—A. H. Robinson....Gulch Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 160 H. P.
EMP—10.

Gulch Mine; Slope; Seam, 8 ft. thick.
PO—Gulch, Colo.; SP—Same; CTY—Pitkin; RR—Colo. & Midland, Gulch Br.
MS—A. H. Robinson....Gulch Colo.
SM—C. L. Hudson, " "
S of H—1 Elec. loco., mules and rope track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers, total 370 H. P.., 2 gen. units, 250 volts D. C., 2 pumps.
EMP—80. Last fiscal year output 58352 tons.

Crested Butte Mine; Slope; Seam 10 ft. thick.
PO—Crested Butte, Colo.; SP—Same; CTY—Gunnison; RR—D. & R. G., Crested Butte Br.
MS—Wm. Manley....Crested Butte, Colo.
SM—J. V. McClenathan, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—7 Return tubular boilers total 700 H. P., 1 lighting plant, 110 volts D. C., 2 comp. and 1 pump.
EMP—195 Coke ovens 154 Bee Hive. Last fiscal year output 132,340 tons.

Berwind Mine; Drift; Seam 4½ ft. thick.
PO—Berwind, Colo.; SP—Same; CTY—Las Animas; RR—Colo. & Sou.
MS—T. P. Davis.....Berwind, Colo.
SM—F. J. Young, " "
S of H—7 Elec. loco., rope and mules track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 350 H. P., 550 volts D. C., from Tabasco Mine, 2 pumps
EMP—378. Last fiscal year output 338,538 tons.

Tabasco Mine; Slope; Seam, 5½ ft. thick; operate washery.
PO—Tabasco, Colo.; SP—Same; CTY—Las Animas; RR—Colo. & Sou.
MS—Chas. O'Neil.....Tabasco, Colo.
SM—M. P. Ferguson " "
S of H—1 Elec. loco, 4 Elec. larry. cars, mules and rope; track gauge 36 in.
S of M—Hand.
PP—12 Return tubular boilers, total 1160 H. P., 4 gen. units 550 volts D. C.
EMP—300. coke ovens, 302 Bee Hive. Last fiscal year output 156,297 tons.

Rouse Mine; Slope; Seam 6 ft. thick.
PO—Rouse, Colo.; SP—Same; CTY—Huerfano; RR—D. & R. G., Rouse Branch.
MS—W. G. Deck.....Rouse, Colo.
SM—B. G. Rodda.....Rouse, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers total 600 H. P., 3 gen. units 440 volts A. C, 3 phase, 25 cycles; 4 pumps.
EMP—295. Last fiscal year output 234,818 tons.

Lester Mine; Slope; Seam, 6½ ft. thick.
PO—Lester, Colo.; SP—Same; CTY—Huerfano. RR—D. & R. G.
MS—W. G. Deck.....Rouse, Colo.
SM—C. S. Bergh.....Lester, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers, total 600 H. P. 440 volts A. C., 3 phases and 60 cycles; buy elec power; 2 pumps.
EMP—217. Last fiscal year output 90047 tons.

Ideal Mine; Drift; Seam, 3½ ft. thick.
PO—Ideal. Colo. SP—Same. CTY—Huerfano; RR—Colo. & Sou.
MS—W. J. Tyson.....Ideal, Colo.
SM—A. M. Ross, " "
S of H—Mules and rope; track gauge 36 in.
S of M—4 Elec. mach and hand.
PP—From Rouse mine, 250 D.C. and 440 volts A. C., 3 phase 25 cycles.
EMP—140. Last fiscal year output 99409 tons.

Cameron Mine; Slope; 4 ft. thick.
PO—Farr, Colo.; SP—Walsenburg, Colo. CTY—Huerfano; RR—Colo. & Sou.
MS—C. A. Kaiser.....Farr, Colo.
SM—V. L. Skinner, " "
S of H—Mules and rope; track gauge 36 in.
S of M—6 Elec. mach. and hand.
PP—Power purchased. 550 volts, D. C., 440 volts A. C., 3 phase 25 cycles; 1 pump
EMP—180. Last fiscal year output 76,495 tons.

Walsen and Robinson Mines; Slopes; Seam 5 ft. thick.
PO—Walsen, Colo.; SP—Walsenburg, Colo.; CTY—Huerfano; RR—Colo. & Sou, D. & R. G.
MS—Wm. Getchell.....Walsen, Colo.
SM—C. S. Buckland.....Walsen, Colo.
S of H—1 Elec. loco., rope and mules, track gauge 36 in.
S of M—13 Elec. mach.
PP—10 return tubular boilers, total 720 H. P., 2 gen. units 550 volts D.C., 440 A.C., 3 phase, 25 cycles; 1 pump.
EMP—450. Last fiscal year output 296,549 tons.

McNally Mine; Shaft; Walsen and Robinson Seam, 5½ ft. thick.
PO—Walsenburg, Colo.; SP—Same; CTY Huerfano; RR—Colo. & Sou.
S of H—Mules and rope; track gauge 36 in.
S of M—2 Elec. mach. and hand.
PP—1 Return tubular boiler 100 H. P., 550 volts D. C.
EMP—35. Last fiscal year output 1984 tons.

Pictou Mine; Slope; Seam, 4 ft. thick; operate washery.
PO—Pictou, Colo.; SP—Same; CTY—Huerfano; RR—D. & R. G., Loma Branch.
MS—John Shaw.....Pictou, Colo.
SM—W. C. H. Reeder, " "
S of H—Mules and rope; track gauge 36 in.
S of M—3 Elec. mach. and hand.
PP—6 return tubular boilers, total 600 H.P., 1 rotary converter. 575 D. C., 440 A. C., 6 phase, 60 cycles; 5 pumps; elec. power purchased.
EMP—193. Last fiscal year output 121,296 tons.

Coal Creek Mine; Shaft; Seam 4 ft. thick.
PO—Coal Creek, Colo.; SP—Rockvale, Colo.; CTY—Fremont; RR—A. T. & S. F., Radiant Br.
MS—Ben Beach.....Coal Creek, Colo.
SM—T. W. Abbott, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.

Continued on Next Page.

COLORADO FUEL & IRON CO (THE)—CONTINUED.

PP—1 M. G. Gen. Set, 250 volts D. C., 440 volts A. C., 3 phase, 30 cycles, 2 pumps; power purchased.
EMP—200. Last fiscal year output 109,900 tons.

Rockvale; Shaft; Seam 4 ft. thick.
PO—Rockvale, Colo.; SP—Same; CTY—Fremont; RR—A. T. & S. F.
MS—Harry John,.....Rockvale, Colo.
SM—G. Olson, " "
S of H—Mules and rope; track gauge 40 in.
S of M—Hand.
PP—4 Return tubular boilers, total 290 H. P., 440 volts A. C., 30 cycles, 3 pumps, power purchased.
EMP—470. Last fiscal year output 223,883 tons

Fremont Mine, Shaft; Seam 4 ft. thick.
PO—Williamsburg, Colo.; SP—Florence, Colo.; CTY—Fremont; RR—D. & R. G.
MS—W. J. Davis..Williamsburg, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 500 H. P., 1 gen. unit 250 volts D. C., 2 pumps
EMP—270. Last fiscal year output 126,216 tons.

Nonac Mine; Slope; Seam, 5½ ft. thick.
PO—Canon City, Colo.; SP—Same; CTY—Fremont; RR—A. T. & S. F.
MS—David Griffiths, Canon City, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler 100 H. P., 440 volts A. C., 3 phase, 30 cycles, 1 pump, elec. power purchased.
EMP—20.

Primero Mine; Drift and Slope; Seam, 5 ft. thick.
PO—Primero, Colo.; SP—Same CTY—Las Animas; RR—Colo. & Wyoming.
MS—Jos. Haske.....Primero, Colo.
SM—D. J. Phillips, " "
S of H—6 Elec. loco., rope and mules; track gauge 36 in.
S of M—Hand.
PP—7 Return tubular boilers, total 750 H. P., 2 gen. units 550 volts D. C., 2 pumps.
EMP—370. Last fiscal year output 308,692 tons.

Colorado Fuel & Iron Co.—Con.

Frederick Mine; Drift; Seam, 5 ft. thick.
PO—Valdez, Colo.; SP—Same; CTY—Las Animas; RR—Colo. & Wyoming.
MS—James O'Neil.....Valdez, Colo.
SM—W. B. Taylor, " "
S of H—3 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler 80 H. P., 250 volts D. C., 1 pump, power from Segundo plant.
EMP—403. Last fiscal year output 409,280 tons.

Segundo (Ovens plant)
PO—Segundo, Colo.; SP—Same; CTY—Las Animas; RR—C. & W.
MS—W. E. Danford, Segundo, Colo.
SM—E. O. Nordgren....Segundo, Colo.
S of H—7 elec. Larry cars.
PP—1 Water tube 13 Return tubular boilers, 1800 H. P., 3 gen. units, 250 volts D. C.
EMP—310. Coke ovens, 800. Last fiscal year output, 311,361 tons.

Hezron Mine; Slope; Seam, 3½ ft. thick.
PO—Lester, Colo.; SP—Hezron, Colo.; CTY—Huerfano; RR—D. & R. G.
MS—Jos. Wilson.....Hezron, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—440 volts A. C., 3 phase, 60 cycles, power furnished from Rouse Mine.

Morley Mine; Slope and Drift; Seam 5 ft. thick.
PO—Morley, Colo.; SP—Same; CTY—Las Animas; RR—A. T. & S. F.
MS—James Wilson.....Morley, Colo
SM—H. G. Lamme, " "
S of H—4 Elec. loco., rope and mules; track gauge 36 in.
S of M—Hand.
PP—5 Return tubular boilers, 550 H. P., 2 gen. units 250 volts D. C., 3 pumps
EMP—275. Last fiscal year output 149,466 tons.

Starkville Mine; Drift; Seam, 4½ ft. thick; operate washery.
PO—Starkville, Colo. SP—Same. CTY—Las Animas; RR—A. T. & S. F.
MS—John Snickerson, Acting Supt. Starkville, Colo.
SM—H. G. Lamme, Starkville, Colo.
S of H—6 Elec. and 1 steam loco. and mules. Track gauge 40 in.
S of M—Hand.
PP—8 Return tubular boilers total 780 H. P., 2 gen. units, 550 volts D. C.
EMP—300. Coke ovens 190 Bee Hive. Last fiscal year output 229,805 tons.

Sopris Mine; Drift; 5 ft. thick; operate washery.
PO—Sopris, Colo.; SP—Same; CTY—Las Animas; RR—Colo. & Sou., Colo. & Wyoming.
MS—Chas. C. Chambers..Sopris, Colo.
SM—F. P. Hufford " "
S of H—1 Elec. loco., mules and rope; track gauge 38 in.
S of M—Hand.
PP—6 Return tubular boilers, total 600 H. P., 1 gen. unit, 575 D. C., 440 volts A. C., 3 phase, 60 cycles; power purchased
EMP—408. Coke ovens 272 Bee Hive. Last fiscal year output 195,103 tons.

Tercio Mine, Drift, Seam 6 ft. thick. operate washery.
PO—Tercio Colo.; SP—Same; CTY—Las Animas; RR—Colo. & Wyoming.
SM—H. A. Hott——.....Tercio, Colo.
S of H—1 Gasoline loco. and mules; track gauge 36 in.
S of M—Hand.
PP—8 Return tubular boilers, total 600 H. P., 1 lighting plant, 1100 volts A. C., 3 phase, 60 cycles.
EMP—296. Coke ovens, 600 Bee Hive. Last fiscal year output 138,367 tons.

Redstone Ovens Plant.
PO—Redstone, Colo., SP—Same; coke ovens, 249 Bee Hive.

Cardiff Oven Plant.
PO—Cardiff, Colo.; SP—Same.
SM—J. H. Wilson.....Cardiff, Colo.
Coke ovens, 167 Bee Hive.

COLORADO & UTAH COAL CO.

Slope Mine; Wedge Seam 9 ft. thick.
PO—Hayden, Colo.; SP—Harris, Colo.; CTY—Routt; RR—D. & S. L.
PR—G. W. Harris.....Oskaloosa, Ia.
TR—B. A. Harris,.....Hayden, Colo.
GM—B. A. Harris, " "
MS—Jas. Lowrey, " "
SCO—Colorado-Utah Supply Co., " "
Note—No. 1 Mine partly equipped, No. 2 will be equipped in spring.

CONSOLIDATED COAL & COKE CO. THE

General Office, Denver, Colo.
Baum Mine, Shaft; Lignite Seam; 6 to 9½ ft. thick.
PO—Dacono, Colo. SP—Same. CTY—Weld. RR—Union Pacific.
PR—C. L. Baum, ... Denver, Colo
TR—C. L. Baum, " "
GM—C. L. Baum, " "
PA—C. L. Baum, " "
GS—C. W. Smith, ... Dacono, "
EM—C. W. Smith, " "
MS—Stanley Bloss.....Dacome, Colo.
MM—John Jennehomme, " "
S of H—Mules and 1 Elec. loco. Track gauge 3 ft.
S of M—9 Elec. mach.
PP—4 Brownell return tubular boilers, total 500 H.P., 1 Westinghouse Generator, 100 K. W., 250 volts, D.C., 12 pumps, power also purchased.
EMP—175. Sales agent, C. L Baum, Denver Colo.

CONVERSE, FRANK

Drift Mine, Seam 12 in. thick.
PO—Paonia, Colo.; CTY—Delta; RR—D. & R. G.
GM—Frank Converse.....Paonia, Colo.
S of H—Mules; track gauge 30 in.
S of M—Hand.
EMP—3. Last fiscal year output 1,200 tons.

CRESTED BUTTE ANTHRACITE MNG. CO.

General Office, Equitable Bldg., Denver, Colo.
Smith Anthracite Mine; Slopes; Seam 54 in. thick.
PO—Crested Butte, Colo.; SP—Same; CTY—Garrison; RR—D. & R. G.
PR—Frank Bulkley.....Denver, Colo.
TR—Jos. Giedlartz, " "
PA—Jos. Giedlartz, " "
MS—O. V. Roberts, Crested Butte, Colo.
MM—Philip Handy, " "
S of H—Mules, rope and gravity.
S of M—Hand.
PP—2 Water tube boilers, total 200 H. P., 3 pumps.
Expect to produce 50,000 tons this year.

CRESTED BUTTE COAL CO. (THE).

General Office, Equitable Bldg., Denver, Colo.
Bulkley Mine; Slope; Lower Seam, 60 to 96 in. thick.
PO—Crested Butte, Colo.; SP—Same; CTY—Garrison; RR—D. & R. G.
PR—Frank Bulkley.....Denver, Colo.
TR—Jos. Giedlartz, " "
PA—Jos. Giedlartz, " "
EM—Ralph G. Bulkley, " "
MS—Fred Gulliford..Crested Butte, Colo.
S of H—Mules, rope and gravity.
S of M—Hand.

CURTIS COAL CO (THE).

General Office, Colorado Springs, Colo.
Curtis Routt Mine; Slope; Seam 60 in. thick.
PO—Pool, Colo.; SP—Milner, Colo.; CTY—Routt; RR—D. & St. L.
PR—W. W. Curtis, Colorado Springs, Colo.
TR—W. W. Curtis, " " "
GM—W. W. Curtis, " " "
PA—W. W. Curtis, " " "
GS—E. R. Wooden.....Pool, Colo.
S of H—Rope.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, gen. unit, 250 volts D. C.
NOTE—Mine just being opened.

DeBOUTER, SAMPSON & PITCHFORD.

Peerless Mine; Shaft; 54 to 60 in. thick.
PO—Frederick, Colo.; SP—Dacono, Colo.; CTY—Weld; RR—U. P.
MS—E. DeBouter.....Frederick, Colo.
S of H—Mules; track gauge, 30 in.
S of M—Hand and 1 comp. air mach.
PP—1 Horizontal boiler, 100 H. P.; 1 air comp., and 1 pump.

DUGGER COAL CO.

PO—Delta, Colo.; CTY—Delta.
No report.

EAGLE COAL CO.

Smith-Tanner Mine.
PO—Florence, Colo.; CTY—Fremont.
No report.

EL PASO COUNTY LAND & FUEL CO. THE

El Paso Mine, Slope; Seam 6½ to 10 ft. thick.
PO—Colorado Springs, Colo. Box 557 SP—Same. CTY—El Paso. RR—C.R.I.
PR—E. J. Ullrich, Colorado Springs, Colo.
TR—E. J. Ullrich, " "
GM—E. J. Ullrich, " "
MS—Fred W. Price, " " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 Kewanee tubular boilers, 200 H. P. 1 generating unit, 220 volts, A.C., 3 phase and 250 volts, D. C. Purchase power.
EMP—86. ast fiscal year output 75,-514 tons.

ELECTRIC COAL CO.

Electric Mine.
PO—Boulder, Colo.; CTY—Boulder.
No report.

EMPIRE COAL MINING COMPANY, THE

General Office, 316 Cooper Bldg., Denver, Colo.
Empire Mine, Slope; Peerless Seam, 5 to 7½ ft. thick.
PO—Aguilar Colo. SP—Same. CTY—Las Animas. RR—Colorado & Southern.
PR—J. W. Siple.....Denver, Colo.
GM—J. W. Siple, " "
TR—R. D. Marthens, " "
PA—R. D. Marthens, " "
MS—Wm. Waddell....Aguilar, Colo.
EM—L. R. Douglass....Aguilar, Colo.
MM—L. R. Douglass, " "
S of H—Rope. Track gauge 36 in.
S of M—Hand.
EMP—4 Return tubular boilers, total 360 H.P., 4 pumps.
Not operating at present, July 1st.

EVANS FUEL CO.

General Office, 2135 15th Street Denver, Colo.
Evans Mine; Shaft; Lignite Seam, 84 to 96 in. thick.
PO—Frederick, Colo.; SP—Same; CTY—Weld; RR—U. P.
PR—G. Zarlengo.....Denver Colo.
TR—Felix Frazzini, " "
GM—Chas. Zarlengo, " "
PA—P. Frazzini.
MS—L. B. Domenico, Frederick, Colo.
MM—John Domenico, " "
EE—Taze Jones, " "
EM—Thos. Knill.....Lafayette, Colo.
S of H—Mules; track gauge 30 in.
S of M—4 Comp. air mach.
PP—3 Return tubular boilers, total 240 H. P. 2 compressors, 1 pump; Power purchased.
EMP—100. Last fiscal year output, 50,-000 tons. Sales Agent, G. Zarlengo, Denver, Colo. Successors to the Evans Coal Land Co.

FARMERS PROGRESSIVE COAL CO.

Black Diamond Mine.
PO—Paonia, Colo.; CTY—Delta.
No report.

FIRESTONE COAL & LAND CO.

See Louisville Coal & Land Co., Firestone, Colo.

FOX COAL MINING CO.

See the Great Matchless Fuel Co.

FREDERICK FUEL CO.

General Office, 306 Exchange Bldg., Denver, Colo.
Frederick Mine, Slope 7 ft. 4 in. thick.
PO—Frederick, Colo. SP—Same. CTY Wald. RR—Union Pacific.
PR—D. M. Simpson, .. Denver, Colo.
GM—D. M. Simpson, " "
MS—Edward Cockburn, Frederick, Colo.
SM—W. E. Kautuer, " "
EM—M. O. Danford, " "
S of H—Mules and rope. Track gauge 36 in.
S of M—10 Comp. air mach.
PP—3 Return tubular boilers, 2 compressed air machines, 2 pumps. Also purchase power.
EMP—90. Last fiscal year output 70,-000 tons.

FRUITH & AUTREY.

See Walsenburg Coal Mng. Co.

GARFIELD COAL MINING CO., THE

General Office, Grand Junction Colo.
Garfield Mine, Slope; Seam 7½ to 8 ft. thick.
PO—Palisade, Colo. SP—Same. CTY—Mesa. RR—D.&R.G., and Colo. Mid.
PR—Albert E. Baylis..Grand Jct., Colo.
GM—Albert E. Baylis, " "
MS—George Smith, " " "
S of H—Gravity.
EMP—6. Last fiscal year output, 7,638 tons. Sales Agent, Albert E. Baylis.

GILSON ASPHALTUM CO.

General Office, Philadelphia Pa.
Two mines in Colorado; 1 mine in Utah.
Rainbow and Bonanza Mines; Shaft; Rainbow and Little Bonanza Seam, 36 to 180 in. thick.
PO—Watson, Utah. SP—Same and Rainbow, Utah. CTY—Unita. RR Unita.
PR—A. W. Sewall, Philadelphia, Pa.
TR—Ira Atkinson, " "
GM—M. W. Cooley, .. Mack, Colo.
PA—Homer D. Ford, .. Watson, Utah.
MS—Homer D. Ford, " "
S of H—Horses. Track gauge 36 in.
S of M—Hand.
EMP—26. Last fiscal year output 9,738 tons.

GORDON COAL CO.

Gordon Mine; Slope; Gordon and Maitland Seam; 5 ft. 8 in. thick.
PO—Walsenburg, Colo.; SP—Same; CTY—Huerfano; RR—D. & R. G.
PR—Wm. Dick, ...Walsenburg, Colo.
TR—Wm. Dick, " "
PA—W. L. Patcher, " "
MS—R. F. Poli, " "
EM—Sanford & Thompson " "
Sco—Huerfano Trading Co." "
S of H—Rope; track gauge 36 in.
S of M—1 Elec. mach. and hand.
PP—1 Water tube boilers, 60 H.P.
PP—Powcr purchased.
EMP—65. Output 25,000 tons.
Sales Agents, Victor-American Fuel Co.
NOTE—In the market for a return tubular boiler, mine cars, trucks and wire rope.

GRAND JUNCTION MNG. & FUEL CO. THE

Genral Offic, Equitable Bldg., Denver, Colo.
Cameo Mine, Drift, Lower Mesa Verda Seam 6 to 9 ft. thick.
PO—Cameo, Colo. SP—Same. CTY—Mesa. RR—Colo. Mid. & D.R.G.
PR—John McNeil, Jr.....Denver, Colo.
TR—A. M. McNeil, " "
GM—C. S. Phister, " "
GS—Geo. W. McNeil.....Cameo, Colo.
PA—Geo. W. McNeil, " "
MS—John Calderhead, " "
MM—D. P. McNeil, " "
EE—D. P. McNeil " "
SCO—The Cameo Merc. Co. Buyer, Geo. W. McNeil, Cameo, Colo.
S of H—3 elec. locos. Track gauge, 36 in.
S of M—7 Elec. mach.
PP—4 Water tube boilers, total 1000 H.P., 3 Gen. units, 250 volts, D.C.
EMP—120. Last fiscal year output 115,000 tons. Sales Agent, Chas. S. Phister, Denver, Colo.

GRAND VIEW COAL CO.

Grand View Mine, Drift; Seam 4 to 5 ft. thick.
PO—Palisade Colo.; SP—Same. CTY Mesa. RR—D. & R. G. and C. & M.

Continued on Next Page.

GM—T. T. De Rush,. Palisade, Colo.
S of H—Gravity. Track gauge 3 ft.
S of M—Hand.
EMP—2 to 6. Last fiscal year output 2,822 tons.

GRAND MESA FUEL CO.
Fairview Mine; Drift; Seam, 78 in. thick.
PO—Delta, Colo.; SP—Same; CTY—Delta; RR—D. & R. G., Fairview Fairview & International Br.
PR—Watson Ziegler.....Delta, Colo.
GM—Watson Ziegler, " "
PA—Watson Ziegler, " "
TR—C. G. Mantz, " "
MS—Wm. Pcoutt, " "
CE—George Enos, " "
MS—C. S. Galliday, " "
S of H—Mules; track gauge, 36 in.
S of M—Hand.
Sales Agent, Watson Ziegler, Delta, Colo.

GREAT MATCHLESS FUEL CO.
General Office, 415 17th St., Denver, Colo.
PR—T. M. Patterson.....Denver, Colo.
GM—S. A. Snyder, " "
TR—R. C. Campbell, .. Denver, "
PA—W. A. Haywood, " "
CE—Thos. Knill.....Lafayette, Colo.
MM—H. Biber, .. Louisville, "
EE—Steven Davis, " "
Sales agent, S. A. Snyder, Denver, "

Matchless Mine, Shaft, Lignite Seam. 4½ to 6 ft. thick.
PO—Louisville, Colo. SP—Same. CTY—Boulder. RR—C. &S.
MS—R. S. Husband, Lafayette, Colo.
S of H—Comp. air loco. and mules. Track gauge 30 in.
S of M—4 Comp. air mach.
PP—1 Compressor and 1 pump. Power purchased.
EMP—98. Last fiscal year output 67,494 tons.

Fox Mine, Shaft, Lignite Seam, 8 to 9 ft. thick.
PO—Gorham, Colo. SP—Marshall, Colo. CTY—Boulder. RR—C.&S.
MS—John Shultz, .. Gorham, Colo.
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—1 Compressor and 2 pumps. Power purchased.
EMP—75. Last fiscal year output 52,894 tons.

HAYDEN BROS COAL CORP. (THE)
General Office, 402 Tramway Bldg., Denver, Colo.
Hayden Mines, Slope; Seam 84 in. thick.
PO—Oak Creek, Colo.; SP—Kramer, Colo. CTY—Routt; RR—D. & S. L.
PR—Lewis A. Hayden.....Denver, Colo.
GM—Lewis A. Hayden, " "
TR—Wm. F. Hayden, " "
GS—M. E. Scrat, " "
PA—M. E. Scrat, " "
CE—L M. Chambers, " "
MS—C. P. O'Neil.....Oak Creek, Colo.
S of H—Elec. nad 1 Steam loco.; track gauge 36 in.
S of M—Hand.
PP—2 Heturn tubular boilers, total 300 H. P., gen. units 100 volts D. C.
EMP—103. Last fiscal year output, 90,000 tons.

HOTCHKISS FUEL & SUPPLY CO. (THE).
The Bennett Mine; Drift; Seam, 60 to 84 in. thick.
PO—Hotchkiss, Colo.; SP Lazear, Colo.; CTY—Delta; RR—D. & R. G., Sommerset Br.
PR—H. P. Bennett....Hotchkiss, Colo.
TR—M. W. Bennett, " "
GM—M. W. Bennett, " "
CE—F. S. Hotchkiss, " "
S of H—Mules.
S of M—Hand.
EMP—3.

HUERFANO COAL CO.
General Office, Denver, Colo.
PR—S. S. Murphy, ... Denver, Colo.
GM—S. S. Murphy, " "
TR—N. S. Anderson, " "
Sales agent J. M. Townsend, " "

Ludlow Mine, Drift, "Hastings" or "Berwind" Seams, 4½ to 7 ft. thick.
PO—Ludlow, Colo. SP—Same. CTY—Las Animas. RR—Colorado & Sou.
MS—F. McDermott.....Ludlow, Colo.
S of H—Rope. Track gauge 3 ft.
S of M—Hand and 3 Elec. mach.
PP—4 Kewanee return tubular boilers, total 420 H.P., 1 generating unit, 2,200 volts A.C., 3 phases 60 cycles. Purchase power.
EMP—120. Last fiscal year output 82,000 tons.

Mutual Mine Shaft, "Walsen" Seam, 8 ft. thick.
PO—Walsenburg, Colo. SP—Same. CTY—Huerfano. RR—Denver and Rio Grande.
MS—R. F. Poli.....Walsenburg, Colo.
S of H—Rope and Mules. Track gauge 3 ft.
S of M—2 Elec. mach and hand.
PP—2 Kewanee return tubular boilers, total 300 H.P. Elec. power purchased.
EMP—20. Last fiscal year output, 1,200 tons.
NOTE—New mine.

IDEAL COAL CO.
Ideal Mine; Slope; Seam, 96 in. thick.
PO—Erie, Colo.; SP Same; CTY—Weld; RR Burlington & W. P.
PR—George M. Wooley.....Erie, Colo.
PA—George M. Wooley, " "
CE—George M. Wooley, " "
TR—Phineas D. Wooley, " "
MS Phineas D. Wooley, " "
S of H—Mules.
S of M—1 Comp. air mach.
PP—2 Water tube boilers, total 140 H. P., 1 compressor, 1 pump.
EMP—15. Last fiscal year output, 9,610 tons.
Successors to Wooley Bros.

IDEAL FUEL CO.
Jewel Mine; Slope; Cameron Seam, 48 in. thick.
PO—Aguilar, Colo.; SP—Lynn, Colo.; CTY—Las Animas; RR—C. & S.
PR—Joseph Cox.....Hillrose, Colo.
TR—Roy C. Cox, 2811 Race St., Denver, Colo.
GM—Roy C. Cox, 2811 Race St., Denver, Colo.
PA—Roy C. Cox, 2811 Race St., Denver, Colo.
MS—Harry Smith.....Aguilar, Colo.
EM—Mark Danfort, " "
MM—Wm. Smith, " "
EE—Wm. Smith, " "
SCO—Ideal Merc. Co., " "
S of H—2 Elec. loco.; track gauge 36 in.
S of M—1 Elec. mach. and hand.
PP—Gen. units, 420 volts A. C., power purchased.
EMP—60. Last fiscal year output, 26,000 tons.
Sales Agent, Roy C. Cox, Denver, Colo.

JEFFRYES COAL & MINING CO.
Jeffryes Mine; Drift; Seam 60 in. thick.
PO—Trinidad, Colo.; SP—Came; CTY—Las Animas.
PR—Eli Jeffryes, ... Trinidad. Colo.
TR—Ethel Heap.....Trinidad, Colo.
PA—James Heap, " "
MS—A. G. Jeffryes " "
S of H—Mules.
S of M—Hand.
EMP—35. Last fiscal year output 6,000 tons.

JOHNSTON COAL & COKE CO., THE
Viola and Wiley, Slope; Seam 5 ft. thick.
PO—Trinidad, Colo. SP—Same. CTY—Las Animas. RR—Trinidad El. Ry.
PR—Austin Lunney, .. Trinidad, Colo.
GM—Austin Lunney, " "
SM—Austin Lunney, " "
PA—Austin Lunney. " "
TR—Margaret Lunney, " "
GS—A. P. Lunney, " "
MS—John McDonald, " "
S of H—Mules and 1 elec. loco. Track gauge 3 ft.
S of M—Hand and 1 elec. mach.
PP—Purchase power.
EMP—19. Last fiscal year output 8,400 tons. Sales agent Austin Lunney.

JONES & IRWIN COAL CO.
Slope Mine; Pinnacle Seam, 72 in. thick.
PO—Oak Creek, Colo.; SP—Same; CTY—Routt; RR—D. & S. L.
PR—D. W. Jones.....Oak Creek, Colo.
TR—J. B. Irwin, " "
PA—J. B. Irwin, " "
S of H—Mules and gravity.
S of M—Hand.
New operation, development just started.

JUANITA COAL & COKE CO.
General Office, Pueblo, Colo.
King Mine, Slope; "King" Seam; 8 to 10 ft. thick.
PO—Bowie, Colo. SP—Same. CTY—Delta. RR—D.&R.C., North Fork Branch.
PR—A. T. King, ... Pueblo, Colo.
TR—A. S. Booth, " "
GM—Alexander Bowie, .. Bowie, "
PA—Alexander Bowie, " "
CE—Alexander Bowie.....Bowie, Colo.
EM—Edwin R. Bowie, " "
MM W. W. Bowie, " "
MS—Wallace D. Bowie " "
S of H—Mules and rope; track gauge 42 in.
S of M—1 Elec. mach. and hand.
PP—7 Return tubular boilers, total 535 H. P., 5 gen. units 500 volts D. C., 5 pumps.
EMP—100. Last fiscal year output 78,000 tons.

JUNIPER COAL COMPANY.
Leased properties to Hayden Bros. Coal Corp.

LAFAYETTE COAL MINING CO.
Pluto Mine; Slope, Sub-Bituminous Seam, 60 to 66 in. thick.
PO Lafayette, Colo.; SP Same; CTY Boulder; RR—C. B. & Q.
TR—George W. Jackson..Lafayette, Colo.
GM—O. M. Hopkins, " "
PA—O. M. Hopkins, " "
MS—O. M. Hopkins, " "
EM—T. J. Knill, Jr., " "
MM—Chas. Campbell, " "
EE Chas. Campbell, " "
S of H Rope; track gauge 36 in.
S of M—3 Comp. air mach.
PP 3 Return tubular boilers, total 280 H. P., 1 compressor, 3 pumps.
EMP—30.

LA PLANTE & SONS.
New Baldwin Mine; Slope; Seam, 48 to 54 in. thick.
PO—Gunnison, Colo.; SP—New Baldwin Mine, Colo.; CTY—Gunnison; RR—D. & R. G.
PR—D. L. La Plante...Gunnison, Colo.
MS—D. L. La Plante, " "
MM—F. R. La Plante, " "
S of H—Mules and rope.
S of M—1 Comp. air mach.
PP—1 Vertical boiler, 60 H. P., 1 compressor, 1 pump.
EMP—5. Output, 1,500 tons.

LEYDEN COAL COMPANY, THE
Leyden Nos. 2 and 3 Mines; Shaft.
PO—Denver, Colo.; SP—Leyden, Colo.; SP—Denver. RR—Denver & Northwestern.
PR—S. M. Perry.....Denver, Colo.
GM—S. M. Perry, " "
TR—F. G. Moffat " "
PA—F. A. Perry, " "
GS—J. C. Perry, " "
S of H—Mules and rope.
S of M—Hand, 5 Elec. and 9 Comp. air mach.
PP—4 Lyons, return tubular boilers, 2 gen. units, 240 volts, D. C.
EMP—200 to 250.
Sales Agent, F. A. Perry, Denver, Colo.

LITTELL BROS. COAL MNG CO.
General Office, Equitable Bldg., Denver, Colo.
PR—W. F. Littell.....Denver, Colo.
TR—H. L. Littell, " "
GM—H. L. Littell, " "
GS—I. A. Littell, " "
Sales Agent, G. A. Tyler, Pueblo, Colo.

Porter Mine, Slope, Seam 5 to 7 ft. thick.
PO—Crested Butte, Colo.; SP—Same; CTY—Gunnison; RR—Denver & Rio Grande Crested Butte Br.
MS—W. R. Kerr, Crested Butte, Colo.
S of H—Mules, rope and gravity; track gauge 28 in.
S of M—Hand.
PP—3 Boilers total 120 H. P.
EMP—75. Last fiscal year output 40,000 tons.

Horace Mine, Shaft, Anthracite Seam 24 to 42 in. thick.
PO—Crested Butte, Colo.; SP—Same; CTY—Gunnison; RR—Denver & Rio Grande, Crested Butte Br.
MS—Jas. Ralston, Crested Butte, Colo.
S of H—Engine, hoist & mules; track gauge 28 in.
S of M—Hand.
PP—1 Boiler 40 H. P. and 1 boiler 60 H. P., 2 Pumps.
EMP—50. Last fiscal year output 16,000 tons.

LOMA FUEL COMPANY THE
Loma Mine; Slope; Walsen Seam, 68 to 84 in. thick.
PO—Walsen, Colo.; SP—Walsenburg. Colo.; CTY—Huerfano; RR—C. & S., and D. & R. G.
PR—Jos. Ball.....Canon City, Colo.
GM—Jos. Ball, " "
SM—Jos. Ball, " "
TR—G. E. Pleasants, Walsenburg, Colo.
PA—G. E. Pleasants, " "
CE—D. A. Stout, " "
EM—D. A. Stout. " "
MM—John A. Modle..Walsenburg, Colo.
SCO—Colo. Supply Co.
S of H—Mules; gravity; track gauge 35 in
S of M—2 Elec. mach.
PP Power purchased.
EMP—32. Last fiscal year output, 24,787 tons.
Sales Agent, C. F. & I. Co., Denver, Colo.

LOUISVILLE COAL & LAND CO.
Firestone Mine, Shaft Seam 6½ ft. thick.
PO—Firestone, Colo.; SP—Frederick; CTY—Weld. RR—Union Pacific.
PR—D. Rotolo.....Firestone, Colo.
GM—D. Rotolo, " "
MS—D. Rotolo, " "
TR—R. A. Mauro, " "
PA—R. A. Mauro.....Firestone, Colo.
S of H—Mules; track gauge 3 ft.
S of M—Hand and 5 comp. air mach.
PP—3 Return tubular boilers, total 260 H. P., 2 Air comp, 2 pumps.
EMP—Last fiscal year output 57,297 tons.

McNALLY, MATTHEWS & CO. (Lessee).
Maitland Mine; Seam, 36 to 42 in. thick.
PO Picton, Colo. SP Walsenburg, Colo.; CTY Huerfano; RR—D. & R. G.
TR George McNally.....Picton, Colo.
GM Jas. Matthews, " "
S of H—Rope and mules.
S of M—4 Elec. mach.
PP Power purchased, 1 pump.
Formerly the Maitland Mine of the Victor-America Fuel Co.

McLAUGHLIN BROS. COAL CO.
See Santa Fe Coal Co.

MANCOS FUEL CO.
Peacock Mine.
PO Mancos, Colo.; CTY—Montezuma.
No report.

MILE HIGH COAL CO.
Mile Hight Mine.
PO Lafayette, Colo.; CTY Boulder.
No report.

MINNEQUA COAL COMPANY
General Office, 561 Ry. Ex. Bldg., Denver, Colo.
Tioga Mine, Slope; Walsen Seam; 5½ to 9 ft. thick.
PO—Tioga, Colo.; SP—Same; CTY—Huerfano; RR—Loma Branch, D. R. G.
PR—E. F. McGowan...Denver, Colo.
GM—E. F. McGowan, ..Denver, Colo.
PA—E. F. McGowan, " "
TR—Mrs. C. M. McCue, Kansas City, Mo.
MS—J. H. Vincent,....Tioga Colo.
EM—T. W. McLaughlin, " "
MM—J. H. Weston, " "
S of H—Mules and rope; track gauge 36 in.
S of M—11 comp. air mach.
PP—2 Air comp.
Last fiscal year output 50,628 tons.
Sales Agent, E. F. McGowan, Denver, Colo.

MOFFAT COAL COMPANY, THE
Oak Hills Nos. 1 and 2 Mines, Slope. Pinnacle Seam, 120 in. thick.
PO—Oak Creek, Colo.; SP—Oak Hills, Colo.; CTY—Routt; RR—D. N. W. & P.
PR—S. M. Perry.....Denver, Colo.
GM—S. M. Perry, " "
TR—J. H. Porter " "
PA—F. A. Perry " "
GS—R. M. Perry....Oak Creek, Colo.
MM—J. J. Haggarty....Oak Creek, Colo.
MS—John Alexander, " "
SM—Thos. Foster....Phippsburg, Colo.
S of H—2 Elec., 2 Steam loco., mules and rope; track gauge 36 in.
S of M—4 Elec. mach. and hand.
PP—4 boilers, total 1000 H. P., 2 gen. units 2300 volts A. C., 2 comp, 2 pumps.
EMP—256.
Sales Agent, F. A. Perry, Denver, Colo.

MONUMENT VALLEY COAL MINING CO.
Larrimore Mine, Slope; "Walsen" Seam, 6 ft. thick.
PO—Strong, Colo.; SP—Same; CTY—Huerfano; RR—D. & R. G.
PR—C. B. Keiser..Kansas City, Mo.
TR—D. B. Bowers, Colorado Springs, Colo.
GM—Chas. Rankin.....Strong Colo.
PA—Chas. Rankin, " "
MS—Chas. Rankin, " "
SM—Chas. Rankin, " "
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP -2 Water tube boilers.
EMP—40.

MUTUAL COAL CO.
Mutual Mine; Shaft; Walsen Seam, 90 to 96 in. thick.
PO—Walsenburg, Colo.; SP—Same; CTY—Huerfano; RR—D. & R. G.
PR—S. S. Murphy, ...Denver, Colo.
GM—S. S. Murphy, " "
PA—S. S. Murphy, " "
TR—N. C. Anderson, " "
MS—Alex Marshall, Walsenburg, Colo.
EM—F. E. Thompson, " "
S of H—Rope.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, total 300 H.P., 1 pump.
EMP—30.
Sales Agent, J. M. Towsend.

NATIONAL FUEL CO (THE)
General Office, Denver, Colo.
7 Mines; Shafts and Slopes; 64 to 168 in. thick.
PO—Louisville and Aguilar, Colo.; SP—Same; CTY—Las Animas, Adams, Boulder and Huerfano; RR—C., B. & Q., U. P., Colo. So., D. & R. G.
PR—H. Van Mater, Denver, Colo.
GM—H. Van Mater, " "
TR—W. S. Stic. " "
PA—Harry Schrieff. " "

Continued on Next Page.

NATIONAL UFEL CO. (THE)—CONT'D.
GS—Joseph Watson, Louisville, Colo.
EM—Samuel Toscher, Denver, Colo.
SCO—Address the Company, Denver, Colo.
S of H—Mules and Rope.
S of M—14 Elec. Mach.
PP—Power purchased.
EMP—500.
Sales Agent, Thos. T. Egan, Denver, Colo.

NEW FOX CREEK COAL CO.
New Fox Mine; Drift; Seam, 84 to 108 in. thick.
PO—Gorham, Colo., SP—Marshall, Colo.; CTY—Boulder; RR—Colo. & Sou.
GS—Guy Fox.....Gorham, Colo.
PA—D. E. Evans, " "
S of H—Gasoline loco.; track gauge, 30 in.
S of H—Hand
EMP—7. Ouput about 100 tons per day.

NEW MAITLAND COAL CO.
Hickory Canon Mine, Slope, Lenox Seam, 3 to 4 ft. thick.
PO—Walsenburg, Colo.; SP—Picton; CTY—Huerfano; RR—D. & R. G., Loma Br.
PR—Samuel Danford..Walsenburg, Colo.
GM—Samuel Danford, " "
MS—Samuel Danford, " "
CE—Danford & Thompson, " "
EM—Danford & Thompson " "
MM—J. F. Thompson, " "
TR—Wm. Gale, " "
EE—Thos. Gale, " "
SCO—Pinion Supply Co., " "
S of H—Mules; track gauge 3 ft.
S of M—1 Elec. mach.
PP—Volts 440, A. C., 3 phases, 1 pump, purchase power.
EMP—45. Last fiscal year output 7,700 tons.
Sales Agent, Edward Slates, Walsenburg, Colo.

NORTH PARK COAL CO.
North Park Mine.
PO—Coalmont, Colo.; CTY— Jackson.
Note—Main slope and entries to extent of 600 feet. Temporary hoisting plant.

NORTHERN COLORADO COAL CO. (THE)
General Office, Laramie, Wyo.
Coalmont Mine, Slope: Mammoth Seam, 480 to 780 in. thick.
PO—Coalmont, Colo.; SP—Same; CTY—Jackson; RR—Colo., Wyo., & Eastern.
PR—E. R. Miller, Williamsport, Pa.
TR—John Peters, " "
GM—J. W. Siple, Laramie, Wyo.
PA—J. W. Siple, " "
GS—Wm. Waddell, Coalmont, Colo.
MS—Wm. Waddell, " "
EM—Thomas Allen, " "
SCO—Coalmont Commercial Co, Coalmont, Colo.
S of H—Rope.
S of M—Hand.
PP—2 Nagle return tubular boilers; total, 200 H.P.; 1 pump.
EMP—75.
Last fiscal year output, 61,500 tons.
Sales Agent, Fred. C. Ewing, Denver, Colo.

O. K. COAL CO.
O. K. Mine; Drift; Seam, 76 to 81 in. thick.
PO—Durango, Colo.;SP—Same; CTY—La Plata; RR—D. & R. G.
PR—F. E. James.....Durango, Colo.
GM—W. W. Bay, " "
MS—W. W. Bay, " "
CE Burdick & Kroeger, " "
S of H—Mules.
S of H—Hand.
EMP—10. Last fiscal year output, 6,000 tons.

OAKDALE COAL CO. (THE)
General Office, Denver, Colo.
PR—Wm. B. Lewis, 40 Wall St., N.Y.
TR A. S. Pratt, 61 Broadway, New York, N. Y.
GS—John D. Jones.....Oak View, Colo.
PA John D. Jones, " "
GM—Harry F. Nash.....Denver, Colo.
CE—Danford & Sanderson, Trinidad, Colo.
SCO Pinon Supply Co., Buyer, Wm. Fitzpatrick Walsenburg, Colo., and South Canon Merc. Co., Buyer, S. Tucker, South Canon, Colo.
Sales Agent, Harry F. Nash, Denver, Colo.

Oakdale Mine; Drift Oakdale Seam 8 to 14 ft. thick.
PO Oakview, Colo.; SP—Tropic, Colo.; CTY—Huerfano; RR—D. & R. G.
MS Wm. Morgan.....Oakview, Colo.
S of H—1 Gasoline loco., rope and mules; rack gauge 36 in.
S of M—10 Comp. air mach. and hand.
PP—4 Return tubular boilers, total 600 H. P., 1 gen. unit for lighting, 3 compressors, 2 pumps.
EMP—200. Last fiscal year output 214,140 tons.

PAGOSA LUMBER CO.
Talian Mine; Drift, Seam 32 in. thick.
PO—Pagosa Junction, Colo.; SP—Talian, Colo.; CTY—Archuleta; RR—D. & R. G.
PR—Whitney Newton.....Denver, Colo.
TR—Whitney Newton, Jr., Pagosa Junction, Colo.
PA—Whitney Newton, Jr., Pagosa Junction, Colo.
MS—William Gill, Pagosa Junction, Colo.
MM—William Gill, " "
S of H—Mules.
S of M—Hand.
EMP—3.
Mine coal for their own use.

PALISADE COAL & SUPPLY CO., THE
Palisade Mine, Slope; Seam 4 to 5 ft. thick.
PO—Palisade, Colo.; SP—Same; CTY—Mesa. RR—D. & R. G., and C. M.
PR—Henry Denman.....Palisade, Colo.
GM—Henry Denman, " "
PA—Henry Denman " "
TR—Fred. Rowley, " "
SM—Fred. Rowley, " "
S of H—Mules and gravity; track gauge 3 ft.
S of M—Hand.
EMP—15. Last fiscal year output 9,000 tons.

PARKDALE FUEL CO.
Now National Fuel Co.

PAONIA COAL CO.
Farmers Mine.
PO—Paonia, Colo.; CTY—Delta.
No report.

PETRY, SAMUEL (Lessor)
Slope; Semi-Bituminous Seam; 2½ to 3½ ft. thick.
PO—Florence, Colo.; CTY— Fremont.
MS—Samuel Petry.....Florence, Colo.
S of H—Track gauge 2 ft. 8 in.
EMP—4. Last fiscal year output 2,000 tons.

PIKE'S PEAK FUEL CO.
General Office, Colorado Springs, Colo.
Pikeview Mine, Shaft.
PO—Pikeview, Colo.; SP—Same; CTY—El Paso; RR—D. & R. G.
PR—A. E. Carlton, Colorado Springs, Colo.
TR—J. R. Young, " "
GM—H. McGarry, Colorado Spgs., Colo.
MS—Geo. L. Crawford, " "
PA—Geo. L. Crawford, " "
CE—J. T. Milliken, " "
MM—W. E. Anderson....Pikeview, Colo.
EE—Floyd Neff, " "
SCO—Miners' & Farmers' T. & M. Co., Pikeview, Colo.
S of H—Elec. loco. and mules.
S of M—Elec. mach. and hand.
PP—3 Boilers, total 300 H P., 1 gen. unit 250 volts D. C.
Sales Agent, J. R. Young, Colorado Springs, Colo.

PLUTO COAL CO.
See Lafayette Coal Co.

PORTER FUEL COMPANY, THE
General Office, Durango, Colo.
Hesperus Mine, Drift; "Fox Hills Group" Seam; 5 to 6 ft. thick.
PO—Hesperus, Colo.; SP—Same; CTY—La Plata; RR—Rio Grande Southern.
PR—A. L. Mohler.....Omaha Neb.
TR—A. H. Doane,(Asst) Cheyenne,Wyo.
GM—Frank A. Manley....Omaha, Neb.
GS—W. I. Gifford....Durango, Colo.
PA—W. I. Gifford, " "
MS—Henry Robertson....Hesperus, Colo.
CE—John McNeil.....Denver, Colo.
EM—F. H. Burdick....Durango, Colo.
MM—Geo. W. Caviness..Hesperus, Colo.
EE Geo. W. Caviness, " "
S of H—Mules, rope and 1 elec loco.; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers total 250 H. P. 2 gen. units, 250 volts, D. C.; 1 pump.
EMP—56. Last fiscal year output 37,606 tons.
Sales Agent, W. I. Gifford, Durango, Colo.

PRIMROSE COAL CO.
Primrose Mines; Slope, Seams 42 to 90 in. thick.
PO—Rugby, Colo.; SP—Same; CTY—Las Animas; RR—Colorado Southern.
PR—H. B. King.....Pueblo, Colo.
TR—H. B. King, " "
GM—H. B. King, " "
PA—H. B. King " "
MS—Harry Mallot.....Rugby, Colo.
EE—R. C. Grout, " "
CE—R. D. Bishard, " "
SCO—Huerfano Trading Co., Rugby, Colo.
General Office, Pueblo, Colo.
S of H—Mules and 2 Elec. locos.; track gauge 36 in.
S of M—Hand and 2 elec. mach.
PP—3 Return tubular boilers, total 400 H. P., 250 volts, D. C. 3 pumps. Last fiscal year output 38,063 tons.

PROSPECT COAL CO.
Prospect Mine.
PO—Trinidad, Colo.; CTY—Las Animas.
No report.

PUEBLO FUEL & MINING CO.
PO—Pueblo, Colo.
No report.

P. V. COAL CO.
P. V. Mine.
PO—Grand Junction, Colo.; CTY—Messa.
No report.

RAPSON COAL & MNG. CO. (THE)
General Office, Colorado Springs, Colo.
PR—W. W. Curtis Colo. Springs, Colo.
TR—W. W. Curtis, " "
GM—W. W. Curtis, " "
GS—R. Wooden, " "

Rapson No. 1 Mine, Slope Seam 3 to 4 ft. thick.
PO—Colorado Springs, Colo.; SP—Rapson, CTY—El Paso; RR—C. & S., D. & R. G.
MS—Irving Mellinger, Rapson, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total, 150 H. P.
Last fiscal year output 67,459 tons.

Rapson No. 2 Mine, Shaft Seam 5 to 8 ft. thick.
PO—Colo. Springs, Colo.; SP—Roswell; CTY—El Paso; RR—C. R. I. & P.
MS—R. Wooden, Colo. Springs, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand and 2 Elec. mach.
PP—2 Return tubular boilers, total 200 H. P., 220 volts D. C., 2 pumps.
Last fiscal year output 43,888 tons.

RIVERSIDE COAL CO.
Fermers' Mine; Drift; Palisade Seam, 32 in. thick.
PO—Palisade, Colo.; SP—Same; CTY—Mesa; RR—D. & G. R.
PR—B. C. Oyler.....Clifton, Colo.
GM—B. C. Oyler " "
MS—Levi Vaughan.....Palisade, Colo.
S of H—Mules.
S of M—Hand.
EMP—5-10.

ROCKY MOUNTAIN FUEL CO., (THE)
General Office, Denver, Colo.
PR—D. W. Brown.....Denver, Colo.
GM—D. W. Brown " "
TR—John J. Roche, " "
GS—George T. Peart, " "
PA—G. A. Easterly, " "
EM—R. W. Shumway, " "
MM—Harry Noble....Lafayette, Colo.
EE John Hawthorne, " "
SCO—Rocky Mountain Store Co., Buyer, E. Horstman, Denver, Colo.
Sales Agent, N. C. Brooks, Denver, Colo.

Kubler and Alpine; Drifts; Baldwin Seam, 5 to 8 ft. thick.
PO—Baldwin, Colo.; SP—Same; CTY—Gunnison; RR—D. & R. G., Baldwin Br.
MS—John Featherstone, Baldwin, Colo.
SM—James Shackleford, " "
S of H—Mules, rope and gravity; track gauge 30 in.
S of M—Hand.
PP—5 Return tubular boilers, 400 H. P., 2 gen. units 500 volts D. C., 2 pumps.
EMP—85. Last fiscal year output 29 280 tons.
Piedmont Mine; Drift and slope; Piedmont Seam, 3 to 6 ft. thick.
PO—Sopris, Colo.; SP—Piedmont Colo.; CTY—Las Animas; RR—C. & W. Sopris Br.
MS—Wm. Morgan.....Sopris, Colo.
SM—L. Lewis. " "
S of H—3 Elec. loco., mules and rope; track gauge 36 in.
S of M—Hand
PP—2 Return tubular boilers, total 200 H. P., 3 pumps; power purchased.
EMP—165. Last fiscal year output 127,000 tons.

Pinon Mine; Shaft; Maitland Seam, 4 5½ ft. thick; operate washery.
PO—Camp Shumway, Colo.; SP—Shumway, Colo.; CTY—Huerfano; RR—D. & R. G.; Loma Br.
MS—Ira D. Zook Camp Shumway, Colo
SM—Wm. Dick....Walsenburg, Colo.
S of H—2 Elec. loco. and mules.
S of M—2 Elec. mach. and hand.
PP—3 Return tubular boilers, total 325 H. P., 1 gen. unit 250 volts D. C., 2 pumps, power purchased.
EMP—70. Last fiscal year output 34600 tons.

Mitchell; Shaft; Simpson Seam, 6 to 11 ft. thick.
PO—Lafayette, Colo.; SP—Same; CTY—Boulder; RR—C. B. & Q.
MS—J. J. Thomas...Lafayette, Colo.
SM—J. S. Cory, " "
S of H—1 Elec. loco. and mules; track track gauge 36 in.
S of M—2 Comp. air mach. and band.
PP—3 Return tubular boilers, total 250 H. P., 1 pump also power from Simpson Mine.
EMP—58. Last fiscal year output 53,119 tons.

Standard Mine; Shaft; Standard Seam, 4 to 9 ft. thick.
PO—Lafayette, Colo.; SP—Same; CTY—Boulder; RR—C. B. & Q.
MS—D. M. Sultz....Lafayette, Colo.
SM—J. S. Cory, " "
S of H—1 Elec. loco. and mules; track gauge 36 in.
S of M—8 Comp. air mach. and hand.
PP—4 Return tubular boilers, total 390 H. P., 1 gen unit 250 volts D. C., 2 comp. and 2 pumps.
Last fiscal year output 108,007 tons.

Majestic Mine, Drift; "Majestic" Seam; 6 ft. thick.
PO—Majestic, Colo.; SP—Forbes Junction, Colo.; CTY—Las Animas.
RR—Colo. & Southern and Denver & Rio Grande, Majestic Br.
MS—Henry Dalby.....Majestic, Cilo.
SM—L. F. Morris, " "
S of H—Mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 120 H. P.
EMP—38. Last fiscal year output 35,000 tons.

Midland Mine, Slope; "Sunshine" Seam; 8 ft. thick.
PO—Sunlight, Colo.; SP—Cardiff. Colo.; CTY—Garfield; RR—Colo. Midland.
MS—J. S. Smith.....Sunlight, Colo.
SM—Harry Cummins, " "
S of H—Rope and mules, track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, 2 gen. unit, 250 volts D. C., 1 pump.
EMP—53. Last fiscal year output 51,000 tons.

Industrial Mine, Shaft; "Industrial" Seam; 4½ to 7 ft. thick.
PO—Superior, Colo.; SP—Same; CTY—Boulder; RR—Colorado & Southern.
MS—F. J. L. MacCormac, Superior, Col.
SM—W. F. Autrey.....Superior, Colo.
S of H—Mules and 2 Elec. loco.; track gauge 36 in.
S of M—7 Elec. mach.
PP—2 Return tubular boilers; 13 pumps.
EMP—95. Last fiscal year output 89,608 tons.

Gorham Mine, Slope; "Gorham" Seam; 6 to 7 ft. thick.
PO—Gorham, Colo.; SP—Marshall, Colo.; CTY—Boulder. RR—Colo. & Southern.
MS—Tom Hilton .....Gorham, Colo.
SM—A. H. Antoine,..Marshall, Colo.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand and 10 comp. air mach.
PP—1 Air comp.; 1 pump, purchase power.
EMP—90. Last fiscal year output 44,744 tons.

Vulcan Mine, shaft; "Vulcan" Seam; 6 to 7 ft. thick.
PO—Lafayette, Colo.; SP—Same; CTY—Boulder; RR—Colo. & Southern.
MS—Chas. Billington..Lafayette, Colo.
SM—J. S. Cory, " "
S of H—Mules; track gauge 3 ft.
S of M—Hand and 6 air comp.
PP—2 Return tubular boilers total 300 H. P.; 1 air comp.; 1 pump.
EMP—50. Last fiscal year output 39,786 tons

Rex No. 1 Mine, Shaft; "Rex" Seam; 6 to 7 ft. thick.
PO—Louisville, Colo.; SP—Same; CTY—Boulder; RR—Colo. & Southern.
MS—William Atkin....Louisville, Colo.
SM—Harry Ball, " "
S of H—Mules; track gauge 36 in.
S of M—Hand and 11 comp. air mach.
PP—2 Return tubular boilers total 150 H.P.; 1 pump; air from No. 2 Mine.
EMP—95. Last fiscal year output 84,039 tons.

Rex No. 2 Mine, Shaft; "Rex" Seam; 3½ to 4½ ft. thick.
PO—Louisville, Colo.; SP—Same; CTY—Boulder; RR—Colo. & Southern.

Continued on Next Page.

MS—L. G. Wilson....Louisville, Colo.
SM—Harry Ball, " "
S of H—Mules and elec. hoists; track gauge 30 in.
S of M—Hand.
PP—6 Return tubular boilers total 750 H. P.; 1 air comp.; 1 pump.
EMP—34. Last fiscal year output 9,476 tons.

Hecla Mine, Shaft; "Hecla" Seam; 4 to 4½ ft. thick.
PO—Louisville, Colo.; SP—Same; CTY——Boulder; RR— Colo. & Southern
MS—Ned Hodgson.....Louisville, Colo.
SM—Harry Ball, " "
S of H—Mules; track gauge 30 in.
S of M—Hand and 4 comp. air mach.
PP—3 Return tubular boilers total 215 H. P., 2 air comp.; 1 pump.
EMP—85. Last fiscal year output 45,506 tons.

Simpson Mine, Shaft; "Simpson" Seam; 6 to 11 ft. thick.
PO—Lafayette, Colo.; SP—Same; CTY——Boulder; RR— Colo. & Southern and C. B. & Q.
MS—I. W. Griffith....Lafayette, Colo.
SM—J. S. Cory, " "
S of H—Mules and 2 elec. loco.; track gauge 36 in.
S of M—Hand and 4 elec. and 5 comp. air mach.
PP—5 Return tubular boilers total 750 H. P., 3 gen. units; 250 volts, D. C.; 1 air comp.; 1 pump, also purchase power
EMP—110. Last fiscal year output 119,194 tons.

ROONEY WHITE ASH COAL CO.
Out of business.

ROUTT COUNTY FUEL CO.
Now being operated by Victor-American Fuel Co.

ROUTT ELECTRIC COAL COMPANY.
Electric City Mine; Slope and Shaft, 60 to 144 in. hick.
PO—Junction City, Colo.; SP—Same; CTY—Routt; RR—D. & St. L.
PR—Albert Wright.....Denver, Colo.
TR—Frank Bishop, " "
PA—G. H. Miller.....Denver, Colo.
MS—C. C. White, Junction City, Colo.
EM—C. C. White. " " "
SCO—Junction City Store, Junction City, Colo.
S of H—Mules.
S of M—Hand.
PP—Boiler, 150 H. P., 2 pumps.
EMP 70. Last fiscal year outupt 29,122 tons.
Sales Agent, G. H. Miller, Denver, Colo.

ROYAL COAL & COKE CO.
Out of business.

ROYAL FUEL CO.
General Office, Denver, Colo.
Royal Mine, Shaft; Seam 7 ft. 1 in. thick.
PO—Aguilar, Colo.; SP—Same; CTY—Las Animas; RR—Colo. & So.
PR—H. Van Mater.....Denver, Colo.
GM—H. Van Mater.....Denver, Colo.
TR—Wm. Mathews, " "
GS—Samuel Tescher. " "
PA—Henry Schuepf. " "
CE—C. A. Fisher, " "
MS—Chas. Pegt.....Aguilar, Colo.
S of H—Mules and rope.
S of M—Hand.
PP—3 Return tubular boilers total 260 H. P., 2 pumps. Purchase power
EMP—100.

ROYAL GEORGE COAL PRODUCING CO.
Royal George Mine; Slope; Radiant, Royal George No. 4 Seam, 72 to 96 in thick.
PO—Canon City, Colo.; CTY—Fremont; RR—A. T. & S. F.
PR—Ben Baumgartel..Canon City, Colo.
PA—Ben Baumgartel, " " "
MS—Ben Baumgartel, " " "
TR—J. A. McFarland " " "
SCO—Gibson Lumber & Fuel Co., Canon City, Colo.
S of H—Mules.
S of M—Hand.
PP—Power purchased, 1 pump.
EMP—50.

RUGBY FUEL COMPANY.
General Office, 314 McPhee Bldg., Denver, Colo.
Rugby Mine, Slope.
PO—Rugby, Colo.; SP—Same; CTY—Las Animas; RR—Colo. & So.
GM—Geo. D. Kimball....Denver, Colo.
PA—Geo. D. Kimball, " "
MS—Thos. McLaughlin..Rugby, Colo.
S of H—Rope.

RUSSELL, WM. E., COAL CO. (THE).
General Office, 1523 Walton St., Denver., Colo.
Russell Mine; Shaft; Seam, 66 to 90 in. thick.
PO—Firestone, Colo.; SP—Frederick; Weld; RR—Union Pacific.
PR—Wm. E. Russell.....Denver, Colo.
TR—Wm. E. Russell, " "
GM—Wm. E. Russell, " "
MS—Wm. Sharp.....Firestone, Colo.
EM—Thos. Knill.....Lafayette, "
S of H—Mules.
S of M—3 Comp. air machines.
PP—3 Return tubular boilers, total 450 H. P., 1 air compressor.
EMP—40. Last fiscal year output, 4,220 tons.

SANTA FE COAL CO.
General Office, Denver, Colo.
Santa Fe Mine, Drift; "No. 4" Seam, 5½ to 6½ ft. thick.
PO—Trinidad, Colo.; SP—Starkville, Colo.; CTY—Las Animas; RR—A. T. & S. F.
PR—S. S. Murphy.....Denver, Colo.
PA—S. S. Murphy, " "
TR—J. E. McLaughlin, Trinidad, Colo.
GM—J. E. McLaughlin, " "
MS—J. E. McLaughlin, " "
EM—Hal Barnes, " "
MM—Wyle Barnes, " "
EE—Wyle Barnes, " "
S of H—Mules, rope and gravity; track gauge 3 ft.
S of M—Hand and 1 elec. mach.
PP—Gen. units, 440 volts, A. C.., 3 phase, 60 cycles; 1 pump; purchase power.
EMP—100. Last fiscal year output 140,000 tons.
Sales Agent, Huerfano Coal Co.

SHAMROCK COAL CO.
Shamrock Mine; Shaft; Puritan Seam, 9 to 11 ft. thick.
PO—Erie, Solo.; SP—Same; CTY—Weld; RR—Burlington.
PR—P. H. Powers.....Erie, Colo.
PA—P. H. Powers, " "
TR—James Brannan, " "
EM—Thos. P. Morgan, " "
MS—Thos. P. Morgan, " "
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—2 Return tubular boilers, total 160 H. P., 1 compressor, 2 pumps.
EMP—8. Last fiscal year output, 10,623 tons.

SIMPSON, D. M.
General Office 306 Exchange Bldg., Denver, Colo.
Frederick Mine; Slope; Seam, 7 ft. 4 in. thick.
PO—Frederick, Colo.; SP—Same; CTY—Weld; RR—U.P.
EM—M. O. Danford.
MS—Edmund Cockburn, Frederick, Colo.
SM—W. E. Kautner, " "
S of H—Mules & rope; track gauge 36 in.
S of M—10 Comp. air mach.
PP—3 Return tubular boilers total 280 H. P.; 2 air compressors and 2 pumps. Power purchased.
EMP—90. Last fiscal year output 70,000 tons.

SOUTH CANON COAL CO.
General Office, Denver, Colo.
Sunshine Canon Mine; Drift; Wheeler Seam, 180 to 240 in. thick.
PO—South Canon, Colo.; SP Same; CTY——Garfield; RR—C. M.
GM—Harry F. Nash.....Denver, Colo.
PA—Harry F. Nash, " "
CE—Danford & Sanderson, Trinidad, Colo.
MS—Evan Thomas, South Canon, Colo.
SCO—South Canon Merc. Co.; Buyer, S. Tucker, South Canon, Colo.
S of H—4 Elec. loco.; track gauge, 36 in.
S of M—1 Elec. mach. and hand.
EMP—60. Last fiscal year output, 15,277 tons.

SOUTHERN COLORADO COAL CO.
PO—Colorado Springs, Colo.
Not engaged in commercial business.

SPENCER, GEO. S.
Mancoe Mine; Drift; Seam, 30 to 40 in. thick
PO—Mancoe, Colo.; CTY—Montezuma; RR—R. G. S.
GM—Geo. S. Spencer....Mancoe, Colo.
S of H—Mules.
S of M—Hand.
Last fiscal year output, 1,000 tons.

STANDARD COAL & LAND CO.
Absorbed by Rocky Mountain Fuel Co.

STAR COAL MINING CO.
See Union Coal & Coke Co.

STATE COAL COMPANY.
General Office, 328 Ry. Exch. Bldg., Denver, Colo.
Shaft; "Boulder Valley" Seam; 5½ to 5 ft. 10 in. thick.
PO—Erie, Colo.; SP—Same; CTY—Weld. RR—U. P. & C. B. Q.
PR—T. C. Williams....Greely, Colo.
GM—T. C. Williams, " "
PA—T. C. Williams, " "
TR—F. F. Roose.....Denver, Colo.
Secy.—F. F. Roose, " "
MS—D. L. Jones.....Erie, Colo.
S of H—Mules Track gauge 3 ft.
S of M—Hand and Sullivan mach.
PP—2 Boilers total 220 H. P.; 1 air comp., 1 pump.
EMP—12. Last fiscal year output 3760 tons.

STATES COAL CO.
Sates Mine; Slope; Seam, 122 to 168 in. thick.
PO—Cedaredge, Colo.; SP —Delta, Colo.; CTY—Delta.
GS—C. G. States.....Cedaredge, Colo.
S of H—Horses.
S of M—Hand.
EMP—2 to 10.
Last fiscal year output, 3,166 tons.

STRATHMORE FUEL CO.
PO—Lafayette, Colo.
PR—W. H. Frantz....Lafayette, Colo.
TR—Frank Hamilton, " "
Mine has been operated under Lessee P. K. Harmon of 309 National Safety Vault Bldg., Denver, Colo.

STOKES, W. D.
Stokes Mine; Slope; Seam 44 in. thick.
PO—Palisades, Colo.; SP—Same; CTY——Mesa; RR—D. & R. G.
GM—Walter Stokes....Palisades Colo.
MS—Walter Stokes, " "
S of H—Mules.
S of M—Hand.
EMP—8.

SUNNYSIDE COAL MNG. CO., THE
General Office, 1062 Gas & E. Bldg., Denver, Colo.
Sunnyside Mine; Slope; "Walsen" Seam 6½ to 9½ ft. thick.
PO—Strong, Colo.; SP—Same; CTY—Huerfano; RR—D. & R. G.
PR—W. F. Oakes.....Denver, Colo.
GM—W. F. Oakes, " "
TR—Ellen Ferry Strong, " "
MS—J. M. Page.....Srong, Colo.
PA—E. H. Shea.....Denver, Colo
CE—Danford & Thompson....Walsenburg.
SCO—Sunnyside Store,
S of H—Mules, rope, gravity and 3 elec. locos.
S of M—3 Elec. mach.
PP—4 Water tube boilers, total 500 H. P., 2 gen. units, 175 K. W., 250 volts, D. C.; 3 pumps.
EMP—100. Last fiscal year output 96,000 tons. Sales Agent, W. F. Oakes, Denver, Colo.

SURFACE CREEK CO-OP. COAL CO.
Cedaredge Mine.
PO—Cedaredge, Colo.; CTY—Delta.
No report.

TEMPLE FUEL CO. (THE).
Kenneh & Brodhear Mines; Slape; 42 to 54 in. thick.
PO—Aguilar, Colo.; SP—Same; CTY—Animas; RR—C. & S.
PR—F. R. Wood.....Aguilar, Colo.
TR—F. R. Wood, " "
GM—F. R. Wood, " "
PA—F. R. Wood, " "
GS—O. C. Cook, " "
MS—O. C. Cook " "
EM—Danford & Douglass, " "
MM—James Hannahan, " "
EE—James Hannahan, " "
SCO—The Temple Supply Co., " "
S of H—1 Elec. mach.; track gauge, 36 in.
S of M—1 Elec. mach.
PP—Power purchased, 2 pumps.
EMP—150. Last fiscal year output, 150,000 tons.

THOMAS COAL CO.
Thomas Mine.
PO—Colorado Springs, Colo.; CTY—El Paso.
No report.

TUDOR COAL CO.
PO—Colorado Springs, Colo.
No report.

TURNER COAL CO.
Turner Mine, Slope; "Walsen" Seam; 8 to 9 ft. thick.
PO—Walsenburg, Colo.; SP—Same; CTY——Huerfano; RR—D. & R. G., Lama Br.
PR—J. B. Dick.....Walsenburg, Colo.
TR—Ralph Snodgran, " "
MS—James Turner, " "
CE—Thos. Thomson, " "
EM—Thos. Thomson, " "
GM—Geo. T. Peart.....Denver, Colo.
PA—Geo. T. Peart, " "
SCO—Pinion Supply Co., Buyer, Wm. Dick, Walsenburg, Colo.
S of H—Mules; track gauge 3 ft.
S of M—Hand at present. Putting in elec.
PP—1 Henry Baltf return tubular boiler total 80 H. P.; will purchase power.
EMP—35. Last fiscal year output 4,000 tons.
Sales Agent, Harry Spingler, Colo., Springs, Colo.

UNION COAL & COKE CO.
General Office, Denver, Colo.
Pryor and Klondyke Mines, Slope; Walsen and Cameron Seams, 3 to 7½ ft. thick.
PO—Pryor, Colo.; SP Same; CTY—Huerfano; RR D. & R. G., Rouse Branch.
PR—J. V. Bowen.....Denver, Colo.
TR—J. V. Bowen, " "
GM—J. V. Bowen, " "
PA—H. Hurlbut, " "
GS—Chas. Beuchat, Sr.....Pryor, Colo.
EE—Chas. Beuchat, Jr., " "
SCO—Huerfano Trading Co., Buyer, John Kirkpatrick, Walsenburg, Colo.
S of H—1 Steam loco. and rope; track gauge 36 in.
S of M—4 Elec. mach. and hand.
PP—2 Return tubular boilers, total 300 H. P., gen. units, 2300 A. C., 3 phase, 60 cycles, 250 volts, D. C., 1-115 H. P., gen. set; 1 pump; power purchased.
EMP—90. Output for nine months 78,000 tons.
Sales Agent, H. Hurlburt, Denver, Colo.

UTAH FUEL CO.
General Office, Salt Lake City, Utah.
1 Mines in Colorado, 5 mines in Utah.
Somerset Mine; Slope; 11 ft. thick.
PO—Somerset, Colo.; SP—Same, CTY—Gunnison; RR—D. & R. G.
PR—E. T. Jeffery.....New York, N. Y.
TR-Asst—E. A. Greenwood, Salt Lake City, Utah
GM—A. H. Cowie..Salt Lake City, Utah.
PA—H. N. How, " " " "
EM—A. C. Watts, " " " "
GS—W. C. Ferguson.....Denver, Colo.
MS—Robert Williams....Somerset, Colo.
SCO—Wasatch Store Co., Buyer J. B. Sciinness, Salt Lake City, Utah.
SM—George McDermaid, Somerset, Colo.
S of H—Mules and rope; track gauge 40 in.
S of M—1 Elec, mach.
PP—6 Return tubular boilers, total 750 H. P., gen. units 500 volts D. C., 1 pump.
EMP—195. Last fiscal year output 263,868 tons.

VICTOR-AMERICAN FUEL CO.
General Office, Denver, Colo.
8 Mines in Colorado, 4 mines in New Mexico.
TR—G. F. Barlett.....Denver, Colo.
GM—W. J. Murray, " "
PA—John McGowan, " "
EM—Chief, F.K.Whiteside, " "
MM—N. J. Chapin, " "
GS—D. J. Griffiths....Trinidad, Colo.
SCO—Western Sores Co., Buyer, W. H. Howell, Denver, Colo.
Sales Agent, W. H. Huff..Denver, Colo.

Gray Creek Mine; Slope; Seam 28-54 in. thick.
PO—Gray Creek, Colo; SP—Beshoar Jc., Colo.; CTY—Las Animas; RR—C. & S.
MS—Thos. Jolly....Gray Creek, Colo.
SM—L. Baker, " "
S of H—2 Elec. loco, mules, rope and gravity; track gauge 36 in.
S of M—1 Elec. mach and hand.
PP—Power purchased.

Hastings Mine; Slope; Seam, 4 to 9 ft. thick; operate washery.
PO—Hastings, Colo.; SP—Same; CTY—Las Animas; RR— C. & S. E.
MS—James Cameron...Hastings, Colo.
SM—E. C. Stream, " "
S of H—Elec. loco., mules and rope; track gauge 36 in.
S of M—Elec. mach. and hand.
PP—1 Pump; power purchased.

Chandler Mine; Shaft; Seam 58 to 64 in. thick.
PO—Chandler, Colo.; SP—Same; CTY—Fremont; RR—D. & R. G.
MS—M. E. Somerville....Chandler, Colo.
SM—A. G. Price, " "
S of H—Elec. loco., mules and rope; track gauge 36 in.
S of M—Elec. mach. and hand.
PP—1 comp., power purchased.

Radiant Mine; Slope; Seam, 45 to 46 in. thick.
PO—Radiant, Colo.; SP—Rockvale, Colo.; CTY—Fremont; RR—A. T. & S. F.
MS—James Struthers...Radiant, Colo.
SM—W. C. Smart, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Elec. mach. and hand.
PP—Power purchased.

Ravenwood Mine; Slope; Seam, 30 to 36 in. thick.
PO—Ravenwood, Colo.; SP—Winchell; CTY—Huerfano; RR—C. & S.
MS—John Neish.....Ravenwood, Colo.
SM—A. E. Bishop, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—Power purchased.

Continued on Next Page.

VICTOR-AMERICAN FUEL CO.—CON'D.
Delagua Mine; Slope and Drift; Seam, 60 to 78 in thick.
PO—Delagua, Colo.; SP—Hastings, Colo.; CTY—Las Animas; RR—C. & S. E.
MS—B. W. Snodgrass..Delague, Colo.
SM—R. G. Holt, " "
S of H—Elec. loco., mules and rope; track gauge 36 in.
S of M—Elec. mach. and hand.
PP—Power purchased.

Bowen Mine; Drift; Seam, 54 to 68 in. thick.
PO—Bowen, Colo.; SP— Same; CTY—Las Animas; RR—C. & S.
MS—W. F. Murray.....Bowen, Colo.
SM—D. T. Givens, " "
S of H—Elec. loco., mules and gravity; track gauge 36 in.
S of M—Hand.
PP—Power purchased.

Pinnacle Mine; Slope; Pinnacle Seam.
PO—Oak Creek, Colo.; SP—Same; CTY—Routt; RR—D. & S. L.
MS—Wm. Burt.....Oak Creek, Colo.
S of H—Mules, rope and gravity.
S of M—3 Elec. mach. and hand.

WALSENBURG COAL MNG CO.
Rockland Mine; Shaft; Walsen Seam, 72 in. thick. Operate Washery.
PO—Rockland, Colo.; SP—Same; CTY—Huerfano; RR—Denver & Rio Grande.
PR—George Fruith..Walsenburg, Colo.
GM—George Fruith, " "
TR—Jas. B. Dick.....Walsenburg, Colo.
MS—T. J. Stone, " "
SM—John Folie, " "
SCO—Huerfano Trading Co., Buyer, John Kirkpatrick.
S of H—Mules and 1 air hoist; track gauge 36 in.
S of M—4 Comp. air machines.
PP—6 Return tubular boilers total 800 H. P.; 2 pumps, power purchased.
Sales Agent, H. N. Nash.

WILLIAMSBURG SLOPE COAL CO.
Emerald and Williamsburg Mines; Slope; Rockvale Lower Seam, 30 to 42 in. thick.
PO—Williamsburg, Colo.; SP—Florence, Colo.; CTY—Fremont; RR—A. T. & S. F.
PR—S. P. Smith, Williamsburg, Colo.
GM—S. P. Smith, " "
MS—S. P. Smith, " "
TR—H. J. Smith, " "
PA—H. J. Smith, " "
EE—T. B. Smith, ...Brewster, Colo.
S of H—Steam loco. and rope.
S of M—1 Elec. mach. and hand.
PP—1 Boiler 90 H.P., 1 pump, power purchased.
NOTE—Emerald new mine, fairly well developed.

THE WILLOUGHBY COAL & LAND CO.
Senator Mine; Shaft; Seam, 5 to 8 ft. thick.
PO—Lafayette, Colo.; SP—Same; CTY—Boulder; RR—C. B. & I.
PR—D. E. Evans, 337 Sherman St., Denver, Colo.
GS—D. E. Evans, 337 Sherman St., Denver, Colo.
PA—Oscar Padfield....Lafayette, Colo.
MS—R. W. Morgan, " "
CE—A. M. Hopkins, " "
S of H—Mules; track gauge 36 in.
S of M—Hand and 2 comp. air mach.
PP—2 Water tube boilers total 120 H. P.; 1 comp., 2 pumps.
EMP—40. Last fiscal year output 30,000 tons.
Sales Agent, L. G. Hurlbert.

WOLLEY BROS.
See Ideal Coal Co.

YAMPA VALLEY COAL CO.
General Office, First National Bank Bldg, Denver, Colo.
Yampa Valley No. 1 and No. 2 Mines; Drifts; 4½ ft. to 11 ft. thick.
PO—Pallas, Colo.; SP—Same; CTY—Routt; RR—Denver & Salt Lake.
PR—P. M. Peltier.....Denver, Colo.
TR—John Connell.....Denver, Colo.
MS—J. J. Wolfersperger....Pallas, Colo.
PA—L. B. Cannon.....Denver, Colo.
S of H—Mules, rope by compressed air hoists, and gravity plane; track gauge 36 in
S of M—Hand and 4 comp. air mach.
PP—1 Kewanee water tube boiler, total 150 H. P.; 1 Norwalk air comp. 2 pumps delivering water to the surface.
EMP—90. Last fiscal year output 80,000 tons.
Sales Agent, Big Four Coal & Coke Co., Denver, Colo.

ILLINOIS

For List of Abbreviations See Page 498.

ABBEY COAL CORPORATION.
Abbey Mine, Shaft; Bellville, No. 6 Seam; 7 ft. thick.
PO—Collinsville, Ill.; SP—Vandalia, Ill.; CTY Madison.
PR—Jesse Long.....Collinsville, Ill.
TR—A. C. Lohmann, " "
GM—F. H. Rice, " "
MS—Thos. Millet, " "
CE—Robert Kneedler, " "
S of H—Mules; track gauge 19 in.
S of M—Hand.
PP—2 Boilers, each 100 H. P.; 1 pump.
EMP—23. Last fiscal year output 12,964.75 tons.

ACME COAL CO.
Acme Mine; Shaft; No. 7 Seam, 66 in. thick; washery.
PO—Streator, Ill.; SP—Same; CTY—LaSalle; RR—A. T. & S. F.
PR—Thos. Fairbairn.....Streator, Ill.
GM—Thos. Fairbairn, " "
PA—Thos. Fairbairn, " "
TR—Robert Fairbairn, " "
MS—Wm. Savil, " "
S of H—Mules.
S of M—Hand.
PP—4 Boilers, 2 pumps. Purchase power.
EMP—75. Last fiscal year output 35,000 tons.

ALDEN COAL CO.
General Office, Davenport, Iowa.
PR—J. W. Gilchrist..Davenport, Iowa.
TR—J. W. Gilchrist, " "
GM—H. M. Gilchrist, " "
PA—H. M. Gilchrist, " "
EM—Arch Gilchrist.....Norris, Ill.
GS—Philip Gell.....Kewanee, Ill.
MM—M. A. Bolton..Farmington, Ill.
SCO—Alden Coal Co., Buyer, Ray Kitzmiller, Norris, Ill.
Sales Agent, C. H. Crowe, Alden Coal Co., Davenport, Iowa.

Alden No. 5, Shaft, No. 5 Seam, 4 ft. thick.
PO—Farmington, Ill., SP—Same, CTY—Fulton; RR—C. B. & Q.
S of H—Mules; track gauge 28 in.
S of M—Hand.
PP—1 Pump, 4 Return tubular boilers, total 300 H. P., 1 gen. unit 110 volts, D. C., also buy power.
EMP—151. Annual output 52,864 tons. Idle 6 months, on account trade conditions.

Alden No. 6, Shaft, No. 5 Seam, 4 ft. thick.
PO—Norris, Ill., SP—Same, CTY—Fulton; RR—C. B. & Q.
S of H—Mules and 2 gasoline loco; trock gauge 36 in.
S of M—Hand.
PP—3 Frost return tubular boilers, total H. P. 450, 2 gen. units 250 volts D. C., 1 pump.
EMP—284. Annual output 199,953 tons.

Alden No. 7, Shaft, No. 1 Seam, 6 ft to 2 ft. 8 in. thick.
PO—Matherville, Ill.; SP—Same, CTY—Mercer; RR—Rock Island and Southern.
MS—J.W. Gilchrist, Jr., Matherville,Ill.
S of H—Mules and 2 gasoline and 2 storage battery loco.; track gauge 36 in.
S of M—Hand.

PP—2 Pumps, 4 Return tubular boilers, total 350 H. P., 1 gen. unit, 110 volts D. C.
EMP—175. Annual output 176,400 tons

Alden No. 8, Shaft, No. 5 Seam, 4 ft. thick.
PO—Farmington, Ill.; SP—Same, CTY—Fulton; RR—M. & St. L.
S of H—Mules; track gauge 36 in.
S of M—6 Elec. mach.
PP—1 75 K. W. 250 volt Steam Engine generator, 1 150 K. W. Rotary converter, 13,200 volts A. C., 3 phase 250 volts D. C. Purchase power.

APPLEGATE & LEWIS COAL CO.
Leased to Logan Coal Company.

ASSUMPTION COAL & MINING CO.(THE)
No. 1 Mine, Shaft, No. 1 Seam, 5 to 3½ ft. thick.
PO—Assumption, Ill., SP—Same, CTY—Christian. RR—Illinois Central.
PR—Silas A. Shafer..Assumption, Ill.
TR—David Lacharite, " "
GM—Silas A. Shafer, " "
PA—Silas A. Shafer, " "
GS—T. H. Connolly, " "
EE—F. L. Taylor. " "
EM—Glenn A. Shafer.....Pana, Ill.
S of H—2 Elec. loco., track gauge 39½ in.
S of M—Hand and 2 elec. machines.
PP—4 Return tubular boilers, total 625 H. P., 250 volts, D. C.
EMP—175. Annual output 73,000 tons
Salesman, John H. Craig, Assumption, Ill

AUBURN & ALTON COAL CO.
Shaft Mine; No. 6 Seam, 84 in. thick.
PO—Auburn, Ill.; SP—Same; CTY—Sangamon; RR—C. & A.
PR—L. W. Senseney, ...Auburn, Ill.
GM—L. W. Senseney, " "
PA—L. W. Senseney, " "
TR—E. H. Senseney, " "
MS—Jas. Ibberson, " "
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—3 Cylinder boilers, total 100 H.P.
EMP—150. Last fiscal year output 100,000 tons.

BAILEY BROS. COAL CO.
Sun and Diamond Mine; Shaft; No. 6 Seam, 5 and 6 ft. thick.
PO—Sunfield, Ill.; SP—Du Quoin, Ill; CTY—Perry; RR—I. C.
GM—Jos. Bailey.....Sunfield, Ill.
PA—Jos. Bailey, " "
SM—R. C. Saunders, " "
S of H—Mules.
S of M—Hand.
PP—2 Boilers.
EMP—50. Last fiscal year output 26,646 tons.

BALD EAGLE MINING CO.
See Chime Coal Co.

BARCLAY COAL MINING CO.
Out of business.

BELL & ZOLLER MINING CO.
Zeiger No. 1, Shaft No. 6 Seam, 12 ft. Franklin. RR—I.C.,C.B.&Q., St. L., I. M. & S. O.
PR—H. E. Bell, ... Chicago, Ill.
TR—W. G. Zoller, " "
GM—R. H. Zoller, " "
PA—J. E. Evans, " "
MS—Joseph Yerly, Zeigler, "
S of H—17 Elec. loco. Track gauge 42 in.
S of M—27 Elec. machines.
PP—6 Water tube HHin boilers, total 2,400 H. P., 1 gen. unit, 250 volts D.C. 3 air comp.
EMP—600. Last fiscal year output 720,415 tons.

BENTON COAL CO.
Benton Mine; Shaft; No. 6 Seam, 90 to 122 in. thick.
PO—Benton, Ill. SP—Same. CTY—Franklin; RR—C. & E. I. and I. C.
PR—P. A. Pearce.....Carmi, Ill.
TR—B. Schettly.....Benton, Ill.
GM—B. Schettly, " "
GS—B. Schettly, " "
PA—B. Schettly, " "
EM—Byron Carpenter, " "
EE—Wm. Reinhart, " "
S of H—3 Elec. loco. Track gauge 42 in.
S of M—15 Elec. mach.
PP—6 Return tubular boilers, total 900 H.P., 2 Gen. units, 250 volts, D. C., 1 pump.
EMP—431. Last fiscal year output 299,414 tons.
Sales Agency, Thomson & Burton Co., Chicago, Ill.

BENTON DISTRICT COAL CO.
Leased to John A. Logan Coal Co.

BERRY, B. F., COAL CO.
General Office, Detroit, Mich.
Standard Mine; Shaft; Illinois Third Seam, 36 in. thick.
PO—Standard, Ill.; SP—Same; CTY—Putnam. RR—C.M.& St. P.
PR—S. T. Crapo, ... Detroit, Mich.
TR—Cooper Wood, " "
GM—Cooper Wood, " "
PA—C. H. Sturgis....Granville, Ill.
GS—Jno. T. Cherry, Standard, Ill., (Taft P. O., Ill.)
MM—John Robinson, Standard, Ill., (Taft P. O., Ill.)
S of H—Mules.
S of M—Hand.
PP—6 boilers, total 900 H. P., 1 pump.
EMP—700. Last fiscal year output 301,302 tons.
Sales Agency, Central Coal Co., Milwaukee, Wis.

BESSEMER COAL & MNG. CO.
GM—Wm. Stevenson, ... Tilden, Ill.
PA—A. R. Lindsay, " "

Crystal Mine, Shaft, No. 6 Seam.
PO—Tilden, Ill. SP—Same, CTY—Randolph. RR—Ill. Central.
MS—John Hougland.....Tilden, Ill.
S of H—Mules.
S of M—Hand.
EMP—200.

Tilden Mine, Shaft, No. 6 Seam.
PO—Tilden, Ill. SP—Same. CTY—Randolph. RR—Ill. Central.
MS—Ben B. Goddard.
S of H—Mules.
EMP—400.
S of M—Hand.

BIG CREEK COLLIERY CO.
General Office, People's Gas Bldg., Chicago, Ill.
PR—Chas I. Pierce, ... Chicago Ill.
GM—Chas. I. Pierce, " "
TR—J. B. Forbes, " "
PA—G. S. Patterson, " "
GS—Mont. Coleman.....Canton, Ill.
EM—R. Williams, " "
SCO—Harrisburg Mercantile Co., and Big Creek Mercantile Co., buyer, J. R. Henderson, Harrisburg Ill.
Sales Agent, C. E. Kartstrom, Chicago, Ill.
Saline County Nos. 2, 3, and 6 Mines; Shaft; "No. 5" Seam; 5 to 7 ft. thick.
PO—Harrisburg, Ill.; SP—Same; Grayson, and Ledford, Ill.; CTY—Saline; RR Big Four.
MS—Geo. Morris, ... Harrisburg, Ill.
S of H—Rope, mules and elec. loco.
S of M—Elec. mach.
PP—6 Boilers, total 900 H.P. 250 volts D.C.
EMP—520. Last fiscal year output 1,200,000 tons.

Big Creek No. 6 Mine, Shaft; No. 5 Seam, 5 to 7 ft. thick.
PO—Grayson, Ill. SP—Same. CTY—Fulton. RR—Big Four and L.&N.
MS—Geo. Morris, ... Harrisburg, Ill.
S of H—Elec. locomotives.
S of M—Elec machines.

Big Creek No. 2 and 4 Mines, Slope and Shaft; "No. 5" Seam, 4½ to 5 ft. thick.
PO—St. David, Ill. SP—Same, and Dunfermline, Ill. CTY—Fulton. RR C. B. & Q.
MS—Monte Coleman, .. St. David, Ill.
S of H—Elec. locomotives.
S of M—Elec. machines and hand.
PP—11 boilers, total 1,650 H.P. 250 volts D.C.
EMP—510.

Big Creek No. 3 Mine, Shaft; No. 5 Seam, 4½ to 5 ft. thick.
PO—Cuba, Ill.; SP—Same. CTY—Fulton. RR—C.B.&Q.
MS—M. Coleman, .. St. David, Ill.
S of H—Mules.
S of M—Hand.
PP—2 boilers, total 300 H.P.
EMP—175. Last fiscal year output for Big Creek Nos. 2, 3, 4, and 6 Mines, 455,172 tons.
Mine closed down.

BIG FOUR WILMINGTON COAL CO.
Closed down.

BIG MUDDY CARTERVILLE MNG. CO.
See Franklin Coal & Coke Co.

BIG MUDDY COAL & IRON CO.
General Office, St. Louis, Mo.
PR—O. L. Garrison.....St. Louis, Mo.
TR—S. L. Sherer, " "
PA—S. L. Sherer, " "
GM—W. L. Schmick, " "
GS—Hiram Willson....Murphysboro, Ill.
MM—W. E. Fultz.... Herrin, Ill., and F. E. McFarland, Murphysboro, Ill.
EE—A. H. Hope.....Herrin, Ill.
Continued on Next Page.

No. 7 Mine; Shaft; No 6 Seam, 6 to 11 ft. thick; operate washery.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—I. C., C. B. & Q., St. L. I. M., Sou.
MS—Henry D. Thompson....Herrin, Ill.
SM—Sam Partington, " "
S of H—3 Elec. loco. and mules; track gauge 42 in.
S of M—Hand.
PP—3 O'Brien, Vertical water tube boilers, total 1050 H. P., 2 gen. units, 250 volts D. C., 5 pumps.
EMP—400. Last fiscal year output 140,517 tons. Normal capacity 500,000 tons.

No. 8 Mine; Shaft; No. 6 Seam, 6 to 11 ft. thick; operate washery.
PO—Clifford, Ill.; SP—Same; CTY—Williamson; RR—I. C. C. B. & Q., St. L. I. & S.
MS—J. R. Pruett.....Clifford, Ill.
SM—E. A. Kilbreth, " "
S of H—3 Elec. loco. and mules.
S of M—44 Comp. air mach. and hand.
PP—12 Return tubular boilers, total 2000 H. P., 2 comp., 3 pumps.
EMP—600. Last fiscal year output 570,578 tons.

No. 9 Mine; Shaft; Nos. 1 and 2 Seam, 4 to 8 ft. thick.
PO—Murphysboro, Ill.; SP—Same; CTY—Jackson; RR I. C. St. Louis Div.
MS—Hiram Willson.....Herrin, Ill.
SM—Roy Palmer.....Murphysboro, Ill.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—9 Elec. mach.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units 250 volts D. C., 8 pumps.
EMP—335. Last fiscal year output 302,648 tons.

Harrison Mine; Shaft; Nos. 1 and 2 Seams, 4 ft. 10 in. to 5 ft. 8 in. thick; operate washery.
PO—Murphysboro, Ill.; SP—Same; CTY Jackson; RR—St. L. I. M. & Sou, St. Louis Div.
MS—Hiram Willson.....Herrin, Ill.
SM—Roy Palmer....Murphysboro, Ill.
S of H—2 Elec. loco. and mules; track gauge 30 in.
S of M—17 Comp. air mach.
PP—8 Return tubular boilers total 1000 H. P., 1 gen. unit 250 volts D. C., 3 comp., 1 pump.
EMP—222. Last fiscal year output 97,838 tons.

BIG MUDDY FUEL CO.
New Virginia Mine, Shaft, No. 7 Seam 7 to 8½ ft. thick; operate washery.
PO—Marion, Ill.; SP—Johnston City, Ill.; CTY—Williamson; RR—C. & E. I. and I. C.
PR—W. L. Dunstan.....Marion, Ill.
MS—W. L. Dunstan, " "
TR—Hogan Willeford, " "
PA—Hogan Willeford, " "
GM—Hogan Willeford, " "
S of H—Rope, 1 elec. loco. and mules.
S of M—9 Elec. machines.
PP—4 Boilers, total 800 H. P., 1 gen. unit, 250 volts, D. C., 6 pumps.
EMP—200. Last fiscal year output 208,000 tons.
Sales Agency, Geo. G. Pope & Co., 203 S. Dearborn St., Chicago, Ill., and 801 Victoria Bldg., S. Louis, Mo.

BINDLEY & MILES CO.
Out of business.

BLACK DIAMOND COAL CO.
Black Diamond Mine, Vein No. 6, 7 to 9 ft. thick.
PO—Auburn, Ill., SP—Same, CTY—Sangamon; RR—C. & A.
PR—G. W. Solomon..Springfield, Ill.
TR—H. A. Solomon, " "
GM—G. W. Solomon, " "
PA—G. W. Solomon, " "
GS—P. H. Solomon, " "
S of H—4 elec. loco.; track gauge 42 in.
S of M—Hand.
PP—6 Return tubular boilers, total 950 H. P., 2 gen. units, 250 volts, D. C.
EMP—321. Annual output 372,600 tons.

BLAIR, GUS., BIG MUDDY COAL CO, (THE)
Mines Nos. 1 and 2, Shafts; No. 2 Seam, 3½ to 7 ft. thick.
PO—Murphysboro, Ill.; SP—Same; CTY—Jackson; RR—Mobile & Ohio, and Mo. Pac.
PR—J. C. Hardy....Murphysboro, Ill.
TR—Gus Blair, " "
GM—Gus Blair, " "
PA—Gus Blair, " "
MS—J. H. Kane, " "
S of H—Mules and rope; track gauge 32 and 36 in.
S of M—8 Comp. air mach.
PP—5 Return tubular boilers, total 150 H. P., 1 air comp. and 1 pump.
EMP—120. Last fiscal year output 84,437 tons

BLUE MOUND COAL CO.
Out of business.

BORDERS COAL CO.
See Forsythe Coal Co.

BOYD COAL & COKE CO.
Boyd Mine; Shaft; No. 6 Seam, 6 ft. thick.
PO—Sparta, Ill.; SP—Same; CTY—Vermillion; RR—M. & O.
GM—W. R. Borders.....Sparta, Ill.
PA—W. R. Borders, " "
MS—E. P. Jones, " "
SM—W. R. Borders.
S of H—Gasoline motors and mules.
S of M—Hand.
PP—2 Boilers total 100 H. P.
EMP—75. Last fiscal year output 20,311 tons.

BREESE-TRENTON MINING CO.
Breese and Buxton Mines.
Shafts, Nos. 5 and 6 Seam, 7½ ft. thick.
PO—Breese, Ill.; SP—Same and Beckemeyer, Ill.; CTY—Clinton; RR—B. & O.
GM—Henry Hummert.....Breese, Ill.
PA—Henry Hummert, " "
MS—Aug. J. Hummert, " "
S of H—Elec. loco. and mules.
S of M—18 Comp. air mach. hand.
PP—14 Boilers, total 1400 H. P., gen. units 250 volts D. C.
EMP—500. Last fiscal year output 401,812 tons.

BREWSTER & EVANS COMPANY.
Walben Mine, Slope, No. 5 Seam, 52 in. thick.
PO—Peoria, Ill., SP—So. Bartonville, Ill.; CTY—Peoria; RR—P. R. T. Ry.
PR—W. C. Evans.....Peoria, Ill.
TR—B. D. Brewster, " "
CE—J. A. Ede.....LaSalle, Ill.
MS—W. C. Evans.....Peoria, Ill.
S of H—Mules, 1 Elec. and 2 storage battery loco.; track gauge 42 in.
S of M—Hand.
PP—Power purchased.
EMP—227. Last fiscal year output 163,100 tons.
Sales Agent, David Rutler & Co., Chicago, Ill.

BRILLIANT COAL & COKE CO.
Brilliant Mine, Shaft, No. 6 Seam 7 ft. thick.
PO—Du Quoin, Ill., SP—Same, CTY—Perry; RR—I. C.
PR—Thos. Horn.....Du Quoin, Ill.
TR—Hy. Horn, Jr., " "
PA—Thos. Horn, " "
GM—E. E. Jocobs, " "
MS—E. E. Jacobs, " "
EE—Thos. Knapp, " "
MM—Carl Davis, " "
S of H—Mules and 1 elec. loco.; track gauge 36 in.
S of M—Hand and 2 elec. mach.
PP—2 Pumps, 3 boilers, 400 H. P., 1 gen. unit 220 volts.
EMP—125. Annual output 56,000 tons.
Sales Agents, Harris & Dillavon Co., Champaign, Ill.

BROOKSIDE COAL CO.
Out of business.

BUNSEN COAL CO.
General Office, So. La Salle St., Chicago, Ill.
3 Mines in Illinois, 1 Mine in Indiana.
PR—W. H. Clingerman, Carnegie Bldg., Pittsburgh, Pa.
TR—C. S. Wardley, ...Chicago, Ill.
Secy—C. S. Wardley, " "
PA—J. C. Hoot, " "
GS—Thomas Mosss.....Danville, Ill.
EM—A. F. Allard, " "
MM—W. A. Chandler....Westville, Ill.
EE—W. A. Chandler, " "

Vermillion Mine; Shaft, No. 6 Seam, 72 in. thick.
PO—Westville, Ill.; SP—Georgeown, Ill.; CTY—Vermillion; RR—C. C. C. & St. L.
S of H—3 Elec. loco.; track gauge 38 in.
S of M—21 Elec. mach.
PP—6 Return tubular boilers, total 900 H. P., 3 gen. units D. C., 1 pump.

Kelly No. 3 Mine Shaft Seam No. 6; 72 in. thick.
PO—Westville, Ill.; SP—Same CTY—Vermillion; RR—C. C. C. & St. L., C. & E. I.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—12 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., gen. unit D. C.

Kelly No. 4 Mine; Shaft, No. 6 Seam, 72 in. thick.
PO—Wesville, Ill.; SP—Same CTY—Vermillion; RR—C. & E. I.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 750 H. P., gen. unit D. C., 2 pumps.

BURNWELL COAL CO.
Not operating.

CAHILL COAL CO.
Now Illinois Zinc Co.

CANTON COAL CO.
Drake's Mine; Shaft; No. 5 Seam, 5 ft. thick.
PO—Canton, Ill., SP—Same, CTY—Fulton; RR—C. B. & Q.
PR—S. A. Drake.....Canton, Ill.
TR—H. L. Reiplinger, " "
GM—S. A. Drake, " "
GS—S. A. Drake, " "
PA—H. L. Reiplinger, " "
EE—Jos. Tuoro, " "
MS—H. C. Hindson, " "
S of H—Mules and 2 elec. loco.
S of M—Hand and 1 elec. mach.
PP—2 Water tube boilers, total 250 H. P., 1 gen. unit, 250 volts, A. C., 60-cycle, 2 pumps, also purchase power.
EMP—225.
Sales Agent, S. A. Drake.

CANTRALL CO-OPERATIVE CO.
PR—Eugene Colgan.....Springfield, Ill.
GM—Eugene Colgan, " "
GS—Eugene Colgan, " "
PA—Eugene Colgan, " "
MM—R. V. Kelley, " "
SCO—Cantrall Mercantile Co., SB—P. M. Barteline, Springfield, Ill.

Cantrall Mine, Shaft, No. 5 Seam, 5½ to 6½ ft. thick.
PO—Cantrall, Ill.; SP—Same; CTY—Sangamon; RR—C. P. & St. L.
MS—Robt. Robinson.....Cantrall, Ill.
S of H—1 8-ton elec. loco.; track gauge 35½ in.
S of M—Hand.
PP—3 Cylinder water tube and 1 tubular boiler, 4 gen. units.
EMP—147. Last fiscal year output 58,000 tons.

Republic Mine, Shaft, No. 5 Seam, 6 ft. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—C. & A.
MS—Chas. Woods.....Springfield, Ill.
S of H—Rope; track gauge 34 in.
S of M—Hand.
PP—3 tubular boilers.
EMP—132. Last fiscal year output 62,000 tons.

CAPITAL COAL CO.
Capital No. 2 Mine, Shaft; No. 5 Seam; 5 ft. 10 in. to 6 ft. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—I. C., B. & O., S. W., C. H. & D. & Ill. Traction System.
PR—P. F. Murphy....Springfield, Ill.
GM—P. F. Murphy, " "
GS—P. F. Murphy.....Springfield, Ill.
PA—P. F. Murphy, " "
TR—W. M. Ryan, " "
MS—Patrick Walsh, " "
EM—Patrick Walsh, " "
MM—F. Barton, " "
EE—F. Barton, " "
S of H—2 Elec. loco. and rope; track gauge 36 in.
S of M—Hand and 3 comp. air mach.
PP—4 Springfield return tubular boilers, total 600 H. P., 1 gen. unit, 250 volts, D. C.; 1 pump.
EMP—367. Last fiscal year output 250,000 tons.
Sales Agent, Edwards & Bradford & Co., Chicago, Ill.

CARBON HILL COAL CO
Stripping Mine, Seam 72 in. thick.
PO—Danville, Ill.; SP—Same; CTY—Vermillion; RR—I. T. S., Big Four, Wabash.
PR—W. G. Hartshorn, Danville, Ill.
TR—W. G. Hartshorn, Jr., " "
GM—J. A. Swanberg, " "
GS—J. A. Swanberg, " "
PA—J. A. Swanberg, " "
MS—John Donaldson, S. Danville, Ill.
MM—John Donaldson, " " "
S of H—1 Steam loco.
PP—Power purchased.
EMP—50.
Sales Agency, Electric Coal Co., J. A. Swanberg, Danville, Ill.

CARLINVILLE COAL CO., (THE)
Carlinville Mine, Shaft, Seam, 7 ft. thick.
PO—Carlinville, Ill., SP—Same, CTY—Macoupin; RR—C. & A. R. R.
PR—W. G. Bartels....Carlinville, Ill.
TR—A. L. Hoblit, " "
GM—W. G. Bartels, " "
PA—W. G. Bartels, " "
GS—W. G. Bartels, " "
CE—Frank Gowin, " "
MS—John Falcetti, " "
SCO—The Carlinville Coal Co., Buyer, W. G. Bartels.
S of H—Mules; track gauge 2 ft.
S of M—Hand.
PP—2-cylinder, 1-flue, 310 H. P. boiler.
EMP—135. Annual output 77,790 tons.
Sales Agent, W. G. Bartels.

CARROLL & FRANKLIN COUNTIES COAL CO.
See Benton District Coal Co.

CARTERVILLE COAL CO.
General Office, Rialto Bldg., St. Louis, Mo.
"Burr C" Mine, Shaft; No. 9 Seam; 9 to 15 ft. thick.
PO—Carterville, Ill.; SP—Same; CTY—Williamson; RR—Ill. Cent., Paducah Div.
Wm. E. Trautmann, Receiver, St. Louis, Mo.
PR—H. B. Burr.....St. Louis, Mo.
GM—H. B. Burr, " "
PA—H. B. Burr, " "
TR—Frederick Vierling..St. Louis, Mo.
MS—Wm. Thompson....Carterville, Ill.
MM—Geo. Lockie, " "
SCO—Carterville, Merc. Co., Buyer, Alex. Thompson, Carterville, Ill.
S of H—Mules and 1 gasoline loco.; track gauge 42 in.
S of M—Hand.
PP—6 Return tubular boilers total 1400 H. P.; 2 pumps.
EMP—240. Last fiscal year output 300,000 tons.
Sales Agent, H. B. Burr, St. Louis, Mo.

CARTERVILLE & BIG MUDDY COAL CO.
John Mine, Shaft; No. 6 Seam; 9 ft. thick; operate washery.
PO—Carterville, Ill.; SP Cambria, Ill.; CTY—Williamson; RR Illinois Central, Johnson City Branch.
PR—Ed. A. Ellis....Carterville, ...Ill.
GS—Ed. A. Ellis, " "
PA—Ed. A. Ellis, " "
TR—E. E. Mitchell.....Carbondale, Ill.
MS—John J. Thomas.....Cambria, Ill.
GM—John J. Thomas.....Cambria, Ill.
S of H—2 Elec. loco; track gauge 36 in.
S of M—Hand.
PP—4 Water tube boilers, total 450 H. P., gen. units 250 volts D. C., and 2 pumps.
EMP—140. Last fiscal year output 100,000 tons.
Sales Agent, Frank Bennett.

CARTERVILLE DISTRICT COAL CO.
No. 1 Mine; Shaft; Seam, 8 ft. thick.
PO—Marion, Ill.; SP—Johnston City, Ill.; CTY—Williamson; RR—C. & E. I., Sou, I. M.
GM—S. H. Goodall.....Marion, Ill.
PA—George B. Calhoon, " "
SM—George B. Calhoon, " "
MS—John Nuttall, " "
S of H—Gasoline motor, rope and mules.
S of M—16 Comp. air mach.
PP—9 Boilers, total 1,350 H. P.; 1 comp.
EMP—250. Last fiscal year output 174,390 tons.

CARTERVILLE & HERRIN COAL CO.
Jeffrey Mine, Shaft, No. 7 Seam, 9 to 12 ft. thick.
PO—Herrin, Ill., SP—Same, CTY—Williamson; RR—I. C. and I. M.
PR—W. C. Alexander, Murphysboro, Ill.
TR—John Alexander.....Herrin, Ill.
GM—John Alexander, " "
PA—John Alexander, " "
GS—John Alexander, " "
MM—John Masters, " "
MS—Richard Dawson, " "
SCO—The Chew Mercantile Co., Buyer, A. T. Chesney, Herrin, Ill.
S of H—Mules and 1 gasoline motor; track gauge 36 in.,
S of M—Hand.
PP—3 pumps, 2 return tubular boilers, total 300 H. P.
EMP—250. Annual output, 212,030 tons.
Sales Agent, A. T. Chesney, Herrin, Ill.

CENTRAL ILLINOIS FUEL CO.
Out of business.

CENTRALIA COAL CO.
No. 5 Mine, Shaft, No. 6 Seam, 6 to 7 ft. thick.
PO—Centralia, Ill.; SP—Same; CTY—Marion; RR—I. C., B. & O. S. W.
PR—H. E. Bell, 343 S. Dearborn St., Chi. Ill
TR—R. H. Zoller " " " "
GM—R. H. Zoller " " " "
PA—J. E. Evans, " " " "
MS—H. G. Brown.....Centralia, Ill.
MM—S. A. Melhuish, " "
EE—Chas. McMillian, " "
EM—John Gibson.....Du Quion, Ill
S of H—11 Elec. loco.; track gauge 42 in.
S of M—Hand and 5 elec. machines.
PP—7 Return tubular boilers, total 900 H. P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—450. Last fiscal year output 500,000 tons.
Sales Agent, W. W. Ritchey, 343 S. Dearborn St., Chicago, Ill.

CHAMPION COAL CO.
Pfanz Mine; Shaft; No. 5 Seam, 4 ft. 8 in. thick.
PO—Pekin, Ill.; SP—Same; CTY—Tazewell; RR—A. T. & S. F.
GM—A. L. Champion.....Pekin, Ill.
PA—A. L. Champion, " "
EM—Jos. Claudin, " "
MS—Wm. Godber, " "
S of H—Mules.
S of M—Elec. mach. and hand.
PP—Boiler 100 H. P., elec power purchased.
EMP—50. Last fiscal year output 14,000 tons.

CHICAGO, SPRINGFIELD COAL CO.
C-S Mine, Shaft; No. 5 Seam, 6 ft. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—Chicago & Alton.
PR—H. H. Devereux....Springfield, Ill.
PA—H. H. Devereux, " "
TR—G. A. Wood, " "
MS—J. H. Hanley....Springfield, Ill.
S of H—Mules and 1 gasoline loco.
S of M—Hand.
PP—4 Return tubular boilers, 2-Erie, 2-O'Brien, 1 pump.
EMP—320. Last fiscal year output 202,388 tons.

CHICAGO SANDOVAL COAL CO.
General Office, 507 McCormick Bldg., Chicago, Ill.
Nos. 1 and 2 Mines, Shaft.
PO—Sandoval, Ill.; SP—Same; CTY—Marion; RR—I. C. and C. B. Q.
TR—C. Newton.....Chicago, Ill.
PA—Chas. B. Cone, " "
MS—Geo. A. Smith.....Sandoval, Ill.
S of H—No 1, tail rope and mules, (No. 2), gasoline motors and mules.
S of M—Hand.
PP—7-Boilers, total 1050 H. P., 2 Litchfield hoisting engines.

CHICAGO, WILMINGTON & FRANKLIN COAL CO.
General Office, McCormick Bldg, Chicago, Ill.
PR—Geo. Higginson, Jr., Chicago, Ill.
TR—W. W. Beckett, " "
ASST TR—E. E. Jones, " "
VP—Geo. B. Harrington, " "
GM—G. B. Harrington, " "
PA—L. D. Smith, " "
CE—Allen & Garcia Co. " "
GS—T. F. Holmes, ...Thayer, Ill.
EM—D. J. Carroll, ...Streator, Ill.
SCO—Miners Supply Co., Chicago, Ill.
Sales Agency, C. F. Lemmon, Chicago, Ill.

No. 1 Thayer Mine; Shaft No. 2 Seam, 80 in. thick operate washery.
PO—Thayer, Ill.; SP—Same and Virden, Ill.; RR—(T) C. & A., I. T. S., (V) C. B. & Q.
MS—T. F. Holmes.....Thayer, Ill.
S of H—1 Elec. loco. and mules; track gauge, 42 in.
S of M—14 Elec. mach.
PP—4 Water tube boilers, total 1,326 H. P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—500. Last fiscal year output, 515,386 tons.

No. 1 Orient Mine; Shaft; No. 6 Seam, 120 in. thick.
PO Orient, Ill.; SP West Frankfort, Ill., and Carbon, Ill.; CTY—Franklin; RR—(W. F.) C. & E. I., (C.) C. B. & Q.
MS—Jos. Louis.....Orient, Ill.
S of H—6 Elec. loco. and mules; track gauge, 42 in.
S of M—11 Elec. mach.
PP 4 Water tube boilers, total 1,600 H. P., 2 gen. units.
EMP 150. Last fiscal year output, 199,649 ons.

No. 3 South Wilmington Mine; Shaft; No. 2 Seam, 36 in. thick; operate washery.
PO South Wilmington, Ill.; SP Same; CTY—Grundy; RR —E. J. & E.
MS—George Notman, S. Wilmington, Ill.
S ofH—Mules and rope; track gauge, 32 in.
S of M—Hand.
PP 14 Return tubular boilers, total 1,-120 H. P., gen. unit A. C., 3 phase, 60 cycles
EMP 500. Last fiscal year output, 234,-377 tons.

No. 3 Streator Mine; Shaft; No. 7 Seam, 66 in. thick
PO Streator, Ill.; SP Same; CTY—La Salle; RR -A. T. & S. F. C. B. & Q., C. & A., C. O. & P.
MS J W Fairbairn . . Streator, Ill.
S of H—Cable; track gauge, 32 in.
S of M—Hand
PP 8 Return tubular boilers, total 640 H. P., 2 gen. units, 250 volts D. C.
EMP 180 Last fiscal year output, 124,-422 tons.

CHICAGO, WILMINGTON & VERMILLION COAL CO .
Now Chicago, Wilmington & Franklin Coal Co.

CHICAGO & BIG MUDDY COAL & COKE CO.
General Office, Fisher Bldg., Chicago, Ill.
Big Muddy Mine No. 1; Shaft; No. 6 Seam, 8 ft. thick.
PO—Marion, Ill.; SP—Same and Herrin, Ill.; CTY—Williamson; RR—C. & E. I., C. B. & Q.
GM—F. C. Honnold.....Chicago, Ill.
PA—A. B. McLaren.....Marion, Ill.
MS—A. B. McLaren, " "
EM—Roy Adams.....Herrin, Ill.
S of H—Elec. loco. and mules.
S of M—Elec. mach. and hand.
PP—5 Boilers, total 750 H. P., gen. unit 250 volts D. C.
Last fiscal year output 204,393 tons.
Sales Agent, O. M. Barnett, Fisher Bldg., Chicago, Ill.

CHICAGO & CARTERVILLE COAL CO.
General Office, Old Colony Bldg, Chicago, Ill.
A and B Mines; Shaft; No. 6 Seam, 9 ft. thick; operate washery.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—C. B. & Q., Mo. Pac., and I. C.
PR—James Pease.....Chicago, Ill.
TR—E. E. Mitchell.....Herrin, Ill.
GM—E. E. Mitchell.....Herrin, Ill.
PA—E. E. Mitchell, " "
MS—Evan D. John, " "
EM—R. E. Mitchell, " "
MM—C. F. Saylor, " "
EE—Thomas Thornton, " "
SM—M. Ransmeier, " "
S of H—3 Elec. loco. and mules; track gauge 36 in.
S of M—23 Comp. air mach. and hand.
PP—5 Water tube, 2 return tubular boilers, total 2000 H. P., 2 gen. units 250 volts D. C., 2 comp. and 3 pumps
EMP—750. Last fiscal year output 395,132 tons.
Sales Agent; W. C. Hill, Old Colony Bldg., Chicago, Ill.

CHIME COAL CO.
Winkle Mine; Shaft; Seam 72 to 98 in. thick.
PO—Craig, Ill.; SP—Winkle, Ill.; CTY—Perry; RR—I. C.
PR—T. M. Brown, ...Craig, Ill.
TR—C. F. Quick. " "
GM—Walter Heiple, " "
MS—Walter Heiple, " "
PA—Board of Directors, ..Craig, Ill.
S of H—Mules.
S of M—Hand.
Note—Successors to the Bald Eagle Mining Co.

CHRISTIAN COUNTY COAL CO.
Shaft; No. 6 Seam; 9 ft. thick.
PO—Taylorville, Ill.; SP—Same; CTY—Christian; RR—Wabash.
PR—W. D. Johnston..Taylorville, Ill.
TR—Roy A. Johnston, " "
GM—W. S. Ridgly, " "
GS—W. S. Ridgly, " "
PA—F. F. Baughman, " "
MS—Mike Rozaiski, " "
S of H—Mules & 4 elec loco.; track gauge 42 in.
S of M—Hand.
PP—6 Water tube boilers total 900 H. P., 1 gen. unit.
EMP—400. Last fiscal year output 287,410 tons.

CHRISTOPHER COAL MINING CO.
General Office, 72 W. Adams St., Chicago, Ill.
Nos. 1 and 2 Mines; Shafts; No. 6 Seam, 108 to 121 in. thick.
PO—Christopher, Ill.; SP—Same. CTY—Franklin; RR—C. B. & Q.
PR Fred Schroeder, 72 W. Adams St., Chicago, Ill.
GM—Fred Schroeder, 72 W. Adams St., Chicago, Ill.
PA—F. A. Tufford, 72 W. Adams St., Chicago, Ill.
TR—Niels Buck, 105 La Salle St., Chicago, Ill.
GS—E. E. Jacobs.....Christopher, Ill.
MM—Geo. R. Jacobs, " "
EE—A. W. Spaht, " "
EM—L. T. Putnam.....Benton, Ill.
S of H—28 Elec. loco.; track gauge 42 in.
S of M—42 Elec. mach.
PP 3 Water tube and 8 return tubular boilers, total 3550 H. P., 750 K. W., 5 gen. units 250 volts D. C., 250 volts A. C., 3 phases, 60 cycles.
EMP—1,000. Output about 3,000 tons per day.

CITIZENS' COAL MINING CO.
A and B Mines; Shaft; No. 5 Seam, 72 in. thick.
PO Springfield, Ill.; SP Same; CTY—Sangamon; RR—C. P. & ST L.
PR John H. Boutjes Peoria, Ill.
TR—John J. Denny....Springfield, Ill.
MS—John J. Denny, " "
GM—Jos. Hann, " "
GS—Jos. Hann, " "
S of H—2 Elec. loco. and mules.
S of M—Hand.
Sales Agency, B. & B. Coal Co. Peoria, Ill.

CITY COAL CO. OF EDWARDSVILLE.
No. 3 Mine; Shaft, No. 6 Seam, 6 ft. 5 in. thick.
PO—Edwardsville, Ill.; SP—Same; CTY—Madison; RR—L. & M., I. T. T. St. L. & W. Wab.
GM—F. W. Herzog....Edwardsville, Ill.
MS—F. W. Herzog, " "
PA—F. W. Herzog, " "
SM—Thos. Geers, " "
S of H—Mules.
S of M—Comp. air mach.
PP—2 Boilers, total 140 H. P., 1 pump.
EMP—30. Last fiscal year output 26,151 tons.

CLARK COAL & COKE CO.
General Office, Peoria, Ill.
Empire No. 2 Mine, Shaft, No. 5 Seam, 4 ft. thick.
PO—Peoria, Ill., SP—Bartlett, CTY—Peoria, RR—M. & St. L.
PR—Horace Clark.....Peoria, Ill.
GS—J. M. Tyson.....Peoria, Ill.
S of H—Mules and 5 elec. loco.; track gauge 36 in.
S of M—Hand.
PP—1 Pump, 5 return tubular boilers, 750 H. P., 2 gen. units 250 volts D. C.
EMP—325. Annual output 200,367 tons.
Sales Agent, M. R. Coleman, Peoria, Ill.

CLOVER LEAF COAL CO.
General Office, St. Louis, Mo.
PR—J. L. Mitchell.....St. Louis, Mo.
GM—Chas. A. Line, " "
PA—C. L. Phister, " "
Sales Agent, T. L. Silverwood, St. Louis, Mo.

No. 2 and Royalton Mine; Shafts; No. 5 Seam, 8 ft. thick.
PO—Coffeen and Royalton, Ill.; SP—Same; CTY—Montgomery and Franklin; RR—Clover Leaf.
MS—M. J. Lochard.
S of H—1 Elec. loco.; track gauge 42 in.
S of M—3 Elec. mach. and hand.
PP—4-O'Brien return tubular boilers, total 600 H. P., 1 gen. unit 250 volts D. C., 1 pump; power purchased.
EMP—200. Last fiscal year output 150,000 tons.
Johnston City Mine; Shaft; No. 5 Seam; 10 ft. thick.
PO—Johnston City, Ill.; SP—Same; CTY—Williamson; RR—C. R. I. & P., Mo. Pac. I. M.
S of H—Elec. loco., (Being equipped).
S of M—Elec. mach, " "
PP—1 Erie City, return tubular boiler, 150 H. P., 1 pump.
EMP—10. New mine.

CLULEY-MILLER COAL CO.
General Office, St. Louis, Mo.
Ruby Mine, Shaft; No. 6 Seam, 6 to 7 ft. thick.
PO—Caseyville, Ill.; SP—Furman's Ill.; CTY—St. Clair; RR—B. & O., S.W.
PR—Webb L. Miller....St. Louis, Mo.
PA—Webb L. Miller, " "
TR—Howard E. Miller, " "
GM—J. G. Beynon.....Caseyville, Ill.
MS—J. C. Beynon, " "
MM—Louis Marxer.....O'Fallon, Ill.
S of H—Mules; track gauge 24 in.
S of M—Hand.
PP—2-O'Brien Return tubular boilers, total 200 H. P.; 1 pump.
EMP—40. Last fiscal year output 40,000 tons. Sales Agent, Webb. L. Miller, St. Louis, Mo.

COAL CREEK MINING CO.
General Office, Galesburg, Ill.
Perrville Mine, Drift, No. 5 Seam, 5 ft. 2 in. to 4 ft. 6 in. thick.
PO—Fairview, Ill. SP—Same. CTY—Fulton. RR—C.B. & Q. Havana Branch.
PR—Thomas Fairbairn .. Streator, Ill.
TR—R. J. Fairbairn.....Galesburg, Ill.
PA—R. J. Fairbairn, " "
MS—Joe Frankovich.....Fairview, Ill.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 gasoline engine for fan.
EMP—24. Annual output 21,191 tons.
Sales Agent, W. R. Hawkins, Galesburg, Ill.

COAL VALLEY MINING CO.
General Office, 139 W. Van Buren St., Chicago, Ill.
PR—Carl Scholz, 139 W.Van Buren St., Chicago, Ill.
GM—Carl Scholz, 139 W.Van Buren St., Chicago, Ill.
TR—Carl Nyquist, 139 W. Van Buren St. Chicago, Ill.
PA—H.S.Mikesell, 139 W.Van Buren,St., Chicago, Ill.

Sherrard Mine No. 2, Shaft, No. 1 Seam, 3 ft. 8 in. thick.
PO—Sherrard, Ill., SP—Same, CTY—Mercer; RR—C. R. I. & P. Ry.
MS—Robt. E. Lee.....Sherrard, Ill.
S of H—1 Elec. loco.
S of M—2 Elec. mach. and hand.
EMP—142. Annual output, 102,881 tons.

Mathersville Mine No. 3, No. 1 Seam, 4 ft. thick.
PO—Mathersville, Ill., SP—Same, CTY—Mercer; RR—R. I., Sou Ry. System.
MS—Robt. E. Lee.
S of H—1 Elec. loco.
S of M—Hand, and 2 elec. mach.
EMP—215. Annual output, 149,883 tons.

COLFAX CO-OPERATIVE CO.
West or No. 1 Mine, Shaft; No. 6 Seam, 6 ft. thick.
PO—Colfax, Ill. SP—Same. CTY—McLean. RR—I.C., Bloomington & Kankakee Branch.
PR—C. T. Hutchison.....Peoria, Ill.
GM—C. T. Hutchison, " "
TR—M. E. Hutchison, " "
GS—J. Dunlap, " "
PA—R. C. Sills, " "
MS—Edw. Keefe.....Colfax, Ill.
MS—Edw. Keefe, " "
EM—D. A. Wood, " "
S of H—Mules. Track gauge 35 in.
S of M—Hand.
PP—3 boilers, total 120 H.P. 1 pump.
EMP—32. Last fiscal year output 17,300 tons. Sales agent; J. L. Barnes, Colfax, Ill.

COLLIER CO-OPERATIVE COMPANY.
Shaft Mine, No. 5 Seam, 4 ft. 4 in. thick.
PO—5912 S. Adam St., Bartonville, Ill.
SP—Acme Station. CTY—Peoria. RR—P. & P. W.
PR—Henry Brown, ... Bartonville, Ill.
TR—Herman Koeppel, " "
GM—Herman Koeppel, " "
GS—Herman Koeppel, " "
PA—Herman Koeppel, " "
CE—John Appleby.
MM—John Appleby.
S of H—Mules and 1 Milwaukee gasoline motor. Track gauge 30 in.
S of M—Hand.
PP—2 Pumps, 2 boilers, 70 H.P.
EMP—40. Annual output, 50,000 tons.

CONSOLIDATED COAL CO. OF ST. LOUIS.
General Office, St. Louis, Mo.
PR—Kingdon Gould, New York, N. Y.
TR—A. W. Carr, ... St. Louis, Mo.
GM—W. J. Jenkins, " " "
GS—J. H. Shaw, " " "
PA—D. Simpson, " " "
EM—C. L. Moorman, " " "
Sales agents, T. D. Payne, Chicago, Ill. and C. M. Snow, St. Louis, Mo.

No. 7 and No. 14 Mines, Shaft, No. 6 Seam, 8 to 10 ft. thick. Operate washery.
PO—Staunton, Ill. SP—Same. CTY—Macoupin. RR—Wabash, L.& M., C. & N. W.
MS—F. E. Weissenborn, Staunton, Ill.
S of H—Mules and motor.
S of M—Comp. air and Elec. mach.
PP—(14) 12 boilers, total 1800 H. P.

No. 15 Mine, Shaft, No. 6 Seam, 96 to 120 in. thick.
Operates washery.
PO—Mt. Olive, Ill. SP—Same. CTY—Macoupin. RR—Wabash.
MS—F. E. Weissenborn, Staunton, Ill.
S of H—Elec and mules.
S of M—Comp. air and Elec. mach.

No. 17 Mine, Shaft, No. 6 Seam, 8 to 10 ft. thick. Operate washery.
PO—Collinsville, Ill. SP—Same. CTY—St. Clair, RR—Vandalia.
MS—P. Grieve, ... Collinsville, Ill.
S of H—Mules.
S of M—Comp. air.

Breese Mine, No. 6 Seam, 8 to 10 ft. thick.
PO—Breese, Ill. SP—Same. CTY—Clinton. RR—B. & O., S. W.
MS—P. Grieve, ... Collinsville, Ill.

Lake Creek Mine, No. 7 Seam 8 ft. thick.
PO—Johnson City, Ill. SP—Same. CTY—Williamson. RR—Mo. Pac.
MS—Jas. Bowie.....Johnson City, Ill.

CONTRACT MINING CO.
Western Brick Co. Mine; Slope; No. 7 Seam, 72 in. thick.
PO—Danville, Ill.; SP—Big Four, Ill.; CTY Vermillion, Ill.; RR Big Four.

Continued on Next Page.

PR—Jas. Doughty, ... Danville, Ill.
TR—Ed. Reilly, " "
GS—Ed. Reilly, " "
PA—S. S. Curry, " "
MM—Harry Madden, " "
EE—Jno. Clark, " "
S of H—1 Steam and 1 Elec. loco.; track gauge 34 in.
S of M—Hand.
PP—220 volts, D.C., 6 boilers, total 900 H. P. Power purchased.
EMP—65. Last fiscal year output 72,000 tons.

CORA COAL COMPANY.
General Office, ... Springfield, Ill.
Shaft Mine, No. 5 Seam, 5 ft. 10 in. to 6 ft. thick.
PO—Springfield, Ill.; SP—Andrews, Ill.; CTY—Sangamon; RR—C. P. & St. L.
PR—G. W. Solomon, ..Springfield, Ill.
TR—H. A. Solomon, " "
GM—G. W. Solomon, " "
GS—H. A. Solomon, " "
PA—C. W. Solomon, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—3 boilers, total 325 H. P.
EMP—221. Annual output, 190,207 tons.

CRESCENT CITY COAL & COKE CO.
PO—Equality, Ill.; CTY—Gallatin.
No report.

CRESCENT COAL CO.
Crescent No. 1 Mine, Drift.
PO—Peoria, Ill. SP—Same. CTY—Peoria. RR—C.B.&Q.
PR—Wm. Swords.....Peoria, Ill.
GM—M. E. Case, " "
PA—M. E. Case, " "
EM—Chas. Dunn, " "
MS—Geo. Decmy, " "
S of H—Elec.
S of M—Elec.
PP—250 volts D.C.
EMP—240.

DANVILLE COLLIERY COAL CO.
Catlin Mine, Shaft, No. 7 Seam, 6 ft. thick.
PO—Catlin, Ill. SP—Same. CTY—Vermilion. RR—Wabash.
PR—B.B. Taylor, ... Catlin, Ill.
TR—B. B. Taylor, " "
GM—B. B. Taylor, " "
PA—B. B. Taylor, " "
GS—Jas. Siddell, " "
EM—Jas. Siddell, " "
MM—R. Cornellous, " "
S of H—Mules and Elec. loco.
S of M—Hand.
PP—2 Water tube boilers, 300 H.P.
EMP—100. Annual output, 80,000 tons. Sales agent, B.B. Taylor.

DANVILLE CONSUMERS COAL CO.
See Tilton Coal Co., .. Danville, Ill.

DAVIS COAL & IRON COMPANY.
Mine abandoned.

DE CAMP COAL MINING CO.
In bankruptcy. Plant being wrecked.

DECATUR COAL CO. (THE)
PR—L. A. Mills, ... Decatur, Ill.
TR—J. H. Howard, " "
GM—W. C. Armstrong, "
GS—W. C. Armstrong.....Decatur, Ill.
PA—W. C. Armstrong, "

No. 1 Mine; Shaft; No. 5. Seam, 4½ ft. thick.
PO—Decatur, Ill. SP—Same. CTY—Macon. RR—I.C., Vandalia, C. H. & D.
MS—Thos. Clark, ... Decatur, Ill.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—4 boilers, total 100 H. P., and 2 pumps.

No. 2 Mine; Shaft; No. 5 Seam, 4 in. thick.
PO—Decatur, Ill.; SP—Same; CTY—Macon; RR—I. C. and Vandalia Line.
MS—Edmond Clark.....Decatur, Ill
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 300 H. P., and 2 pumps.

DERING COAL CO.
Wm. C. Neblack, Receiver.
General Office, 1918 McCormick Bldg., Chicago, Ill.
GS—James DuBois, ...Westville, Ill.
EM—J. E. Jones, " "
MM—James Bailey, " "
PA—J. E. Ford, 1918 McCormick Bldg., Chic. "
CE—J. A. Garcia, "
EE—Seconds Novario, .. Catlin, "
Sales agent, J. K. Dering Coal Co., Chicago, Ill.

Derling No. 2. Shaft. Grape Creek Seam No. 6. 8 to 5 ft. thick.
PO—Westville, Ill. SP—Same. CTY—Vermilion. RR—C.&E.I., Villa Grove Branch.
MS—Robt. Pettigrew, .. Danville, Ill.
S of H—Mules, 3 elec. loco., gauge 38 in.
S of M—Entries sheared by hand; rooms solid shooting.
PP—1 pump, 5 return tubular Atlas boilers, total 600 H.P., 1 gen. unit, 250 volts D.C.
EMP—400. Annual output 200,000 tons.

Dering No. 4, Shaft, Grape Creek Seam No. 6, 6½ to 5 ft. thick.
PO—Westville, Ill. SP—Same. CTY—Vermilion. RR—C.&E.I., Villa Grove Branch.
MS—Jos. McFadden, ..Danville, Ill.
S of H—Mules and 2 gasoline motors. Track gauge 38 in.
S of M—Entries sheared by hand; rooms solid shooting.
PP—1 pump, 4 Atlas return tubular boilers, total 600 H.P.
EMP—400. Annual output 200,000 tons.
Little Jack Mine; Shaft;
PO—West Frankfort, Ill.; SP—Same; CTY—Franklin; RR—C. & E. I.

DE SOTO-PEACOCK COAL CO.
Shaft Mine; Seam, 132 to 156 in. thick.
PO—De Soto, Ill.; SP—Same; CTY—Jackson; RR—I. C.
GM—Chas. M. Hart.....De Soto, Ill
GS—Chas. M. Hart, " "
MS—Wm Neal, " "
S of H—Mules; track gauge, 26 in.
S of M—Hand.
PP—Boiler, 80 H. P.; 1 pump.
Last fiscal year output, 24,000 tons.

DIMOND, JESSE, COAL CO.
PO—Benton, Ill.
Will start development work in six weeks.

DONALY-KOENNECKE COAL CO.
New Donaly Mine, Shaft, No. 7 Seam, 9 ft. 6 in. thick.
PO—Carterville, Ill. SP—Cambria, Ill. CTY—Williamson. RR—Ill. Central.
PR—F. H. Koennecke, Carterville, Ill.
GM—F. H. Koennecke, " "
TR—D. M. Koennecke, " "
MS—Jas. Reid, " "
EM—R. A. Rolla,.. Murphysboro, "
MM—Riley Bullock, Carterville, "
SM—J. R. Barlow, " "
S of H—Rope and mules. Track gauge, 36 in.
S of M—Hand.
PP—Return tubular boilers, total 200 H.P., 2 generating units; 2 pumps.
EMP—150. Last fiscal year output, 116,000 tons. Sales agent, Maguire Coal Co., St. Louis, Mo.

DONK BROS. COAL & COKE CO.
General Office, 314 N. 4th St., St. Louis, Mo.
GM—E. C. Donk, ... St. Louis, Mo.
Donkville Mine, Shaft, No. 6 Seam. RR—St. Louis, Troy & Eastern.
MS—H. C. Perry, .. Collinsville, Ill.
PP—6 boilers, 600 H.P.
EMP—300.

Maryville Mine, Shaft, No. 6 Seam.
PO—Maryville, Ill. SP—Same. CTY—Madison. RR—St. Louis, Troy & Eastern.
S of H—Elec.
S of M—Hand.
PP—9 boilers, 900 H.P.
EMP—450.

Troy Mine, Shaft, No. 6 Seam.
PO—Troy, Ill. SP—Same. CTY—Madison. RR—St. Louis, Troy & Eastern.
S of H—Elec.
S of M—Comp. air.
PP—4 boilers, 400 H.P.
EMP—347.

DOZAW VALLEY COAL CO.
Dozaw Mine; Shaft; No. 6 Seam, 60 to 96 in. thick.
PO—Marissa, Ill.; SP—Same; CTY—St. Clair; RR—I. C.
PR—Martin Ruester.....Marissa, Ill.
TR—George F. Dryden, " "
PA—George F. Dryden, " "
GM—Henry McCarnes, " "
MS—Henry McCarnes, " "
MM—Thos. B. Guthrie, " "
S of H—1 Gasoline motor and mules; track gauge, 32 in.
S of M—Hand.
PP—2 Return tubular boilers, total 200 H. P., 1 pump.
EMP—15. Last fiscal year output, 30,000 tons.
Successors to the Forsyth Coal Co.

DUQUOIN OPERATING CO.
See Davis Coal & Iron Co.

DURHAM COAL CO.
Galatia No. 1 Mine; Shaft; No. 7 Seam, 66 in. thick.
PO—Galatia, Ill.; SP—Same; CTY—Saline; RR—I. C., Eldorado Br.
PR—Leonard W. Ingham..Clinton, Ill.
TR—W. A. Durham.....Galatia, Ill.
PA—W. A. Durham, " "
GM—B. A. Durham, " "
Successors to the Galatia Coal Co.

DYNOMIC COAL MINING CO.
No. 3 Mine.
PO—Duquoin, Ill. No report.

EAGLE MINING CO.
Eagle Mine, Shaft, No. 5 Seam, 5 ft. thick.
PO—Canton, Ill. SP—Same. CTY—Fulton. RR—T.P.&W.
PR—Samuel Windsor, ... Canton, Ill.
TR—Samuel Windsor, " "
GS—Samuel Windsor, " "
GM—E. B. Hale, " "
PA—E. B. Hale, " "
S of H—Mules, 1 gasoline motor. Track gauge 35 in.
S of M—Hand.
PP—3 Return tubular boilers, total 250 H.P.
EMP—200. Annual output, 137,000 tons. Sales agent, H. W. Lynch, Peoria, Ill.

ECONOMY COAL CO.
Stripping Mine, 84 to 108 in. thick.
PO—Marion, Ill.; CTY—Williamson; RR—C. & E. I.
PR—Noah Payn.....Marion, Ill.
TR—S. H. Goodall, " "
GM—S. H. Goodall, " "

EDWARDSVILLE HOME TRADE COAL CO.
Home Trade Mine; Shaft: No. 7 Seam, 48 to 72 in. thick.
PO—Edwardsville, Ill.; SP—Same; CTY—Madison; RR—Wab.
PR—Frank Lannar, ...Worden, Ill.
GM—Frank Lannar, " "
GS—Frank Lannar, " "
TR—George B. Worden, Edwardsville, Ill.
PA—George B. Worden, " "
S of H—Mules; track gauge 24 in.
S of M—Hand.
PP—1 Pump.
EMP—48. Last fiscal year output 34,000 tons.

EGYPTIAN COAL MNG. CO.
General Office, 407 Chamber of Commerce, St. Louis, Mo.
Advance and Meek Mines, No. 7 Seam, 7 ft. thick.
PO—Marissa, Ill. SP—Same. CTY—St. Clair. RR—I.C.
PR—J. A. Hamilton, .. Marissa, Ill.
TR—A. C. Smith, ...St. Louis, Mo.
PA—P. B. Smith " "
GM—W. E. Meek, ... Marissa, Ill.
MS—John W. Williams, " "
S of H—Mules. Track gauge 32 in.
S of M—Hand.
NOTE—Oak Ridge Mine idle temporarily account top works burned. Mine equipped elec. haulage.

ELECTRIC COAL CO.
Out of business.

ELDNAR COAL CO.
Eldnar Mine, Shaft, Seam 7 ft. thick.
PO—Belleville, Ill. SP—Same. CTY—St. Clair. RR—L.&N., O'Fallon Branch.
PR—Jos. Randle, ... Belleville, Ill.
TR—Wm. Randle, " "
PA—Wm. Randle, " "
GM—Aug. Andrews, " "
S of H—Mules. Track gauge 42 in.
S of M—5 Comp. air Machines.
PP—1 Water tube boiler, total 125 H P., 1 Compressor, 1 pump.
EMP—60. Last fiscal year output 57,860 tons. Sales agent, W. L. Miller, St. Louis, Mo.

ELDORADO COAL MINING CO.
No. 1 Mine; Shaft; No. 5 Seam, 56 to 66 in. thick.
PO—Eldorado, Ill.; SP—Same; CTY—Saline; RR—Big Four.
PR—George L. Land.....Ridgway, Ill.
TR—C. H. Burnett.....Eldorado, Ill.
GM—F. S. Seagrave, " "
PA—F. S. Seagrave, " "
EM—A. L. Voight, " "
EE—Chas. Sargeant, " "
MS—Chas. A. Gilmour, " "
S of H—2 Elec. loco. and mules.
S of M—12 Elec. mach an dhand.
PP—5 boilers, total 750 H. P., gen. unit 250 volts D. C., 1 pump.
EMP—300. Last fiscal year output 300,000 tons.
Sales Agent, F. D. Kilmer, Old Colony Bldg., Chicago, Ill.

FAIRBURY COAL CO.
West Mine; Shaft; No. 6 Seam, 55 in. thick.
PO—Fairbury, Ill.; SP—Same; CTY—Livingston; RR—T. P. & W.
PR—Wm. Morris.....Fairbury, Ill.
TR—M. A. Morris, " "
S of H—Mules.
S of M—Hand.
EMP—45.

FAIRMOUNT COAL CO.
Bennett Station Mine; Shaft; No. 7 Seam, 66 in. thick.
PO—Fairmount, Ill.; SP—Same CTY—Vermillion; RR—C. & E. I., Wab.
PR—Chas. Swanson.....Fairmount, Ill.
GM—Chas. Swanson, " "
PA—Chas. Swanson, " "
MS—Chas. Swanson, " "
TR—John Anderson, " "
CE—Walter Cerjack, " "
MM—Walter Cerjack, " "
S of H—Mules.
S of M—Hand.
PP—3 boilers, total 400 H. P., 1 pump.
EMP—14. t Last fiscal year output 10,000 tons.

FARMERSVILLE COAL MNG. CO.
H. C. Hamilton, Receiver.
Shaft Mine, No. 6 Seam, 6½ to 12 ft. thick.
PO—Farmersville, Ill. SP—Same. CTY—Montgomery. RR—Ill. Central.
PR—O. P. Wenneborg, Farmersville, Ill.
PA—O. P. Wenneborg, " "
MS—O. P. Wenneborg, " "
MM—Otto H. Wenneborg, " "
EM—Wm. Wenneborg, " "
TR—J. F. Snell, ... Girard, "
S of H—Mules.
S of M—Hand.
PP—2 return tubular boilers, total 200 H.P., 1 pump.

FISCHER FUEL CO.
General Office, St. Louis, Mo.
Stripping Mine, Belleville Seam, 6 to 7½ ft. thick.
PO—Millstadt, Ill. SP—Same. CTY—St. Clair; RR—M. & O., Millstadt Branch.
PR—L.E. Fischer, .. St. Louis, Mo.
GM—L.E. Fischer, " "
PA—L.E. Fischer, " "
TR—W. L. Murphy.
S of H—2 Steam loco.; track gauge 42 in.
S of M—Steam shovel.
EMP—30. Last fiscal year output 35,000 tons. Sales Agency B. W. Hilgard, St. Louis, Mo.

FORSYTH COAL CO
Now Dozaw Valley Coal Co.

FRANKLIN COAL & COKE CO.
PR—J. L. Mitchell, ...Royalton, Ill.
MM—A. E. Giles, " "
EE—A. E. Giles, " "
PA—A. M. Pfisterer, . St. Louis, Mo.
TR—C. Newton, ... Chicago, Ill.
SCO—Franklin Supply Co.,
SM—J. R. Hudelson.....Royalton, Ill.
Sales agent, Bickett Coal & Coke Co., Chicago, Ill.

Mitchell Nos. 1 and 2 Mines, Shafts, No. 6 Seam, 10 ft. thick.
PO—Royalton, Ill. SP—Same. CTY—Franklin; RR—C. B. & Q. and I. C.
MS—R.B. Mitchell, . Royalton, Ill.
S of H—Mules and 8 elec. locos. Track gauge 42 in.
S of M—Hand and 16 elec. mach.
PP—4 Erie City water tube and 2 Frost return tubular boilers, total 1500 H.P., 3 gen. units, 250 volts D.C. 2 pumps. Last fiscal year output 420,000 tons.

FULLERTON COAL CO.
Fullerton Mine, Shaft, No. 6 Seam, 6 to 7 ft. thick.
PO—Belleville, Ill. CTY—St. Clair. RR—L.&N.
PR—Jos. Randle, ... Belleville, Ill.
GM—Jos. Randle, " "
TR—Oswald Bollman, " "
PA—Oswald Bollman, " "
MS—Joseph Peri.....Belleville, Ill.
S of H—Mules. Track gauge 2 ft.
S of M—Hand.
PP—2 Return tubular boilers, total 180 H.P., 1 generating unit, 1 pump.
EMP—55. Last fiscal year output 19,785 tons.

G. J. COAL CO.
No. 1 Mine.
PO—Seneca, Ill SP—Same. CTY—La Salle. No report.

GALLATIN COAL & COKE CO.
Equality Mine, Shaft, No. 5 Seam, 4¾ to 5½ ft. thick.
PO—Equality, Ill. SP—Same. CTY—Gallatin. RR—L.&N.
PR—Ben. W. Robinson, Equality, Ill.
TR—J. E. Cox, ...Evansville, Ind.
GM—Ben W. Robinson, Equality Ill.
MM—O. Sisk, " "
MS—Jno. B. Smith. " "
S of H—Mules and electric. Track gauge 40 in.
S of M—Comp. air machines.
PP—4 Return tubular boilers, total 500 H.P., 3 pumps. Installing entirely new equipment, including modern steel tipple; will equip with electric haulage and mining machines.

GARTSIDE COAL CO.
General Office, St. Louis, Mo.
Gartside No. 4, Shaft, No. 2 Seam, 4 to 7 ft. thick.
PO—Murphysboro, Ill. SP—Same. CTY—Jackson. RR—Mobile & Ohio.
PR—Robert A. Niggeman..St. Louis, Mo
TR—Robert A. Niggeman, " "
Secy—Wm. J. Niggeman, " "
S of H—Mules. Track gauge 32 in.
S of M—Hand and 7 air compressors.
PP—7 return tubular boilers, 2 air compressors, 2 pumps.
EMP—110. Last fiscal year output 70,000 tons.

GAUCH COAL MINING CO.
Out of business.

GERMAN COAL CO.
Slope Mine, No. 5 Seam, 4½ ft. thick.
PO—Mapleton, Ill. SP—Hollis, Ill. CTY—Peoria. RR—T.P.&W.
GM—Charles Leitner....Mapleton, Ill.
PA—Charles Leitner, " "
EM—T.H. Leitner, " "
MS—Wm. Williams, .. Pekin, "
S of H—Mules and rope.
S of M—Elec. machines.
PP—2 boilers, total 120 H.P. gen. unit, 250 volts D.C.
EMP—20. Last fiscal year output 15,214 tons.

GILMORE & SOLOMON COAL MINING CO.
General Office, Chicago, Ill.
Shaft Mine, No. 5 Seam, 4 to 6 in. thick.
PO—Peoria, Ill.; SP—Same; CTY—Peoria; RR—P. & P. U.
PR—C. W. Gilmore, Transportation Bldg., Chicago, Ill.
TR—G. W. Solomon, State Nat. Bank Bldg., Chicago, Ill.
Sales Agency, Address the Company, Chicago, Ill.
Successors to the Groveland Coal Co.

GIRARD COLLIERIES CO.
Now part of Montour Coal Co.

GLENRIDGE COAL CO.
Now part of Montour Coal Co.

GOLDEN RULE COAL CO.
Shaft Mine, No. 6 Seam, 6 ft. 10 in. thick.
PO—Lenzburg, Ill. SP—Same. CTY—St. Clair.
S of H—Mules.
S of M—Hand.
EMP—17. Last fiscal year output 3,042 tons. State report.

GRANGER COAL CO.
Shaft Mine; Anti-Cline Seam, 72 to 96 in. thick.
PO—Craig, Ill.; SP—Winkle, Ill.; CTY—Perry; RR—Ill. Cent.
PR—A. G. Graham.....Craig, Ill.
TR—A. G. Graham, " "
GM—A. G. Graham, " "
PA—A. G. Graham, " "
MS—Herbert Griffet, " "
EE—Roy Perrin, " "
SCO—Graham Mercantile Co., Craig, Ill.
S of H—Mules.
S of M—Hand.
PP—2 Pumps.
EMP—100. Sales Agency, Bald Eagle Coal Co., St. Louis Mo.

GRAY COAL CO.
Sold to Missouri Mining Co.

GREENVIEW MINING CO.
Out of business.

GREENWOOD COAL CO.
PO Edinburg, Ill.
Successors to C. W. Vandever.

GROOM COAL CO.
Richland Mine, Shaft, No. 6 Seam, 7½ ft. thick.
PO—Belleville, Ill. SP—Same. CTY—St. Clair.
S of H—Mules.
S of M—Hand.
EMP—35. Last fiscal year output, 29,504 tons. State report.

GROVELAND COAL CO.
Leased to Gilmore & Solomon Coal Mfg. Co.

HAFER WASHED COAL CO.
General Office, Chicago, Ill.
Hafer Mine No. 3, No. 7 Seam 7 to 9 ft. thick. Operate washery.
PO—Carterville, Ill. SP—Herrin. CTY—Williamson. RR—I.C.&St. L., I.M.&S., Herrin Southern Branch.
GM—M. J. Manermann...Chicago, Ill.
MS—J. McGonagil.....Carterville, Ill.
MM—Sherman Moore, " "
CE—Ralph Rolls, ..Murphysboro, Ill.
EM—Ralph Rolls, " "
S of H—Mules and 1 gasoline loco. Track gauge 36 in.
S of M—Hand
PP—4 return tubular boilers, total 350 H.P., 2 pumps.
EMP—250.

HARRISON COAL CO.
Harrison Mine, Shaft, No. 7 Seam, 5 ft. thick. Operate washery.
PO—Streator, Ill. SP—Same. CTY—La Salle. RR—C.&A.
PR—Henry Toppendorf, Rock Island, Ill.
TR—J.E. Klenzer, .. Davenport, "
GM—R.Gardner, ... Streator, "
PA—R.Gardner, " "
MS—R.Gardner, " "
CE—Fred. Renze, " "
EM—Robt. Gross, " "
MM—Jos. Holliday, " "
S of H—Mules. Track gauge, 36 in.
S of M—Hand.
EMP—105. Last fiscal year output, 97,204 tons. Sales agent, R. Gardner, Streator, Ill.

HARRISBURG SOUTHERN COAL CO.
Sold to Big Creek Colliery Co.

HART-WILLIAMS COAL CO.
Hart-Williams No. 1, Shaft, No. 6 Seam, 9 to 12 ft. thick.
PO—Benton, Ill. SP—Same. CTY—Franklin. RR—Illinois Central, C. &E.I. and St. L.I.M.&S.
PR—Walter W. Williams, Benton, Ill.
TR—W. H. Hart, " "
GM—Geo. A. Powers....Benton, Ill.
PA—Geo. A. Powers, " "
GS—Lacy Peyton, " "
MS—Wm. Armstrong, " "
MM—E. T. Kell, " "
EE—Emmet Gentry, " "
EM—J. L. Oliver, " "
SCO—Nolen Merc. Co., " "
S of H—Mules and 3 elec. loco.; gauge 42 in.
S of M—18 Elec. mining machines.
PP—7 Water tube, Kewanee, 18x72 boilers, total 1050 H. P., 2 gen. units 250 volts, D. C., 1 pump.
EMP—470. Last fiscal year output 493,930 tons.
Sales Agent, A. N. East, Fisher Bldg., Chicago, Ill.

HICKORY HILL COAL COMPANY.
Hickory Hill Mine, Slope; No. 5 Seam, 4 ft. 4 in. to 5 ft. thick.
PO—Equality, Ill.; SP—Dempsey, Ill.; CTY—Gallatin; RR— L. & N., Shawneetown Branch.
PR—J. P. Turns.....Equality, Ill.
PA—J. P. Turns, " "
TR—J. E. Turns, " "
SM—J. E. Turns, " "
GM—A. J. Sisk, Jr " "
EM—A. J. Sisk, Jr. " "
MS—J. E. Dempsey, " "
MM—Luther Sisk, " "
EE—Luther Sisk, " "
SCO—J. E. Turns Supply Co., Buyer, J. E. Turns.
S of H—Rope and mules; track gauge 30 in.
S of M—3 Elec. machines.
PP—2 Water tube boilers, total 200 H. P., gen. unit 250 volts D. C., 1 pump.
EMP—65. Last fiscal year output 45,032 tons.

HIGHLAND COAL CO.
Highland Mine, Shaft: Seam; 6 to 9 ft. thick.
PO—Belleville, Ill.; SP—Same; CTY—St. Clair; RR—L. & N.
PR—Christ Neff.....Belleville, Ill.
TR—A. Crosspitsch, " "
MS—A. Crosspitsch, " "
EM—Wm. Stack, " "
S of H—Mules, track gauge 22 in.
S of M—Hand.
EMP—20 to 25.

HILLSBORO COAL COMPANY.
Hillsboro Mine; Shaft; No. 6 Seam; 7½ to 8 ft. thick.
PO—Hillsboro, Ill.; SP Same; CTY—Montgomery; RR—C. C. C. St. L. Ry., C. & E. I. Ry.
PR—Amos Miller.....Hillsboro, Ill.
TR—Rice Miller, " "
GM—Rice Miller, " "
PA—Rice Miller, " "
MS—W. H. Smith, " "
S of H—3 Elec. loco.; track gauge 26 in.
S of M—10 Electric machines.
PP—4 Boilers total 600 H. P., 2 gen. units, 250 volts, D. C.; 2 pumps delivering water to the surface.
EMP—250.

HOME MINER'S COMPANY OF MOUNT PULASKI
Mt. Pulaski Mine; Shaft; No. 3 Seam, 48 to 54 in. thick.
PO—Mt. Pulaski, Ill.; SP—Same; CTY—Logan; RR—I. C.
PR—A. J. Adams, ...Springfield, Ill.
GM—A. J. Adams, " "
PA—A. J. Adams, " "
MS—A. J. Adams, " "
TR—A. McVay, ...Mt. Pulaski, Ill.
CE—A. McVay, " "
GS—Will Warren, " "
EM—Will Warren, " "
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, total 300 H.P., gen. units, 1 pump.
EMP—12. Output 100 tons per day.
Sale Agency, A. McVay, Mt. Pulaski, Ill.
Successors to Mount Pulaski Colliery Co.

ILLINOIS COLLIERIES CO.
Now Montour Coal Co.

ILLINOIS FUEL CO., THE
Mine No. 4, Shaft, No. 6 Seam, 6 to 6½ ft. thick.
PO—Sparta, Ill. SP—Same. CTY—Randolph. RR—Illinois Southern, and Mobile & Ohio.
PR—W. S. Ingraham, ..Bristol, Conn.
TR—W. V. Stockton.....Sparta, Ill.
GM—W. V. Stockton, " "
PA—W. V. Stockton, " "
SECY—J. C. Newman, " "
MS—A. F. Kramer, " "
EM—L. J. Robertson, Springfield, "
MM—Geo. McDauer.....Sparta, Ill.
EE—Wick Barber, " "
S of H—1 Elec. loco. Track gauge 42 in.
S of M—7 Elec. machines.
PP—2 Cylinders, 2 return tubular boilers, 4 boilers, total 450 H.P., 250 volts, D.C.
EMP—200. Coke Ovens, 102 Bee Hive. Last fiscal year output 180,000 tons.
Sales Agent, D. L. Willis, Chicago, Ill.

ILLINOIS HOCKING WASHED COAL CO.
Burned out May, 1913. Closed since.

ILLINOIS MIDLAND COAL CO.
See Peabody Coal Co.

ILLINOIS VALLEY COAL CO.
Nos. 1, 2 and 3 Mines, Drifts, No. 7 Seam 3 ft. 10 in. thick.
PO—Sparland, Ill., SP—Same. CTY—Marshall. RR—C.R.I.&P.
GM—O. F. Scholz, .. Sparland, Ill.
PA—O. F. Scholz, " "
MS—Robert Ray and Geo. Martin, " "
EM—C. H. Dunn,.....Peoria, Ill.
S of H—Mules.
S of M—Elec. mach. and hand.
PP—1 Gen unit, 1 100 K.W., 250 volts D.C.
EMP—200. Last fiscal year output (1-2) 54,268 tons. .. ...

ILLINOIS THIRD VEIN COAL CO.
No. 1 Mine, Shaft; No. 2 Seam, 3½ ft. thick.
PO—Ladd, Ill. SP—Same. CTY—Bureau. RR—C.B.&Q., C.M.&S. T.L.P., C.&N.W., C.I.&S.
PR—George B. Taylor.....Erie, Pa.
TR—C. F. Sherard.....Ladd, Ill.
GM—C. F. Sherard, " "
MS—F. D. Chadwick, " "
S of H—Mules.
S of M—Hand.
PP—6 Return tubular boilers, total 900 H. P., 1 gen. unit 250 volts D. C., 3 pumps. Purchase power.
EMP—600. Last fiscal year output 211,016.14 tons.

ILLINOIS ZINC CO.
Mines Nos. 1 and 3; Slope and Shaft; No. 2 Seam, 24 to 60 in. thick.
PO—LaSalle, Ill.; SP—Deer Park Mine, Ill.; CTY—LaSalle ;RR—C. B. & Q.
PR—Thos. F. Noon, ... Peru, Ill.
GM—Thos. F. Noon, " "
GS—J. A. Ede, " "
EM—J. A. Ede, " "
EE—Wm. Pettigrew, " "
MM—H. Alexander, " "
PA—E. H. Wolff, " "
S of H—Mules and gravity. Track gauge 37 in.
S of M—Hand, panel and Longwall.
PP—2 Kewanee boilers, water tube, total 200 H.P.
EMP—147.

INTERNATIONAL COAL & MINING CO.
General Office, St. Louis, Mo.
Carbon Mine, Shaft, No. 6 Seam, 7 to 11 ft. thick.
PO—O'Fallon, Ill. SP—Same. CTY—St. Clair. RR—B.&O. S.W.
PR—J. Edw. Yoch, ..St. Louis, Mo.
GM—J. Edw. Yoch, " "
PA—J. Edw. Yoch, " "
TR—Jacob B. Yoch, " "
GS—Thomas Grant, ... O'Fallon, Ill
MS—Geo. A. Fischer, " "
EM—Geo. A. Fischer, " "
EE—J. B. Yoch, " "
S of H—1 Elec. loco. and mules. Track gauge 30 in.
S of M—3 Elec. machines.
PP—4 Return tubular boilers, total 600 H. P. 250 volts D. C., 1 pump.
EMP—100. Last fiscal year output 77800 tons. Sales Agent, E. Willhite, O'Fallon, Ill.

JACKSON COAL CO.
General Office, Charleston, W. Va.
Muddy Valley Mine; Shaft; Herrin No. 6 Seam, 90 to 144 in. thick.
PO—Hallidayboro, Ill.; SP—Same; CTY—Jackson; RR—I. C.
PR—H. L. DePue....Charleston, W. Va.
TR—L. S. Echols, " "
GM—S. J. Harry.....Connellsville, Pa.
PA—E. F. Miller....Hallidaysboro, Ill.
MS—E. F. Miller, " "
MM—Wm. Stewart, " "
EE—Wm. Stewart, " "
SCO—Muddy Valley Supply Co., Hallidayboro, Ill.
S of H—Mules.
PP—14 Return tubular boilers, total 1500 H. P., 1 air comp., and 2 pumps.
EMP—315. Last fiscal year output 242,000 tons.

JOHNSON-ALLEN COAL CO.
Out of business.

JOHNSON VALLEY COAL CO.
Johnson Valley Mine, Shaft, No. 5 Seam 5½ ft. thick.
PO—Fancy Prairie, Ill. SP—Middletown, Ill. CTY—Menard. RR—C.&A., Peoria Division.
PR—Jerry Johnson, Fancy Prairie, Ill.
EM—Jerry Johnson, " "
TR—C.C. Johnson, " "
GM—H.C. Johnson, " "
PA—H.C. Johnson, " "
MS—H.C. Johnson, " "
S of H—Mules. Track gauge, 26 in.
S of M—Hand, 1 Puncher, 1 Comp. air mining machine.
PP—2 water tube boilers, total 120 H.P., 1 air compressor, 1 pump, delivering water to surface.
EMP—10. Last fiscal year output 6,000 tons.

JOHNSTON CITY COAL COMPANY.
General Office, Old Colony Bldg., Chicago, Ill.
Mine No. 1, Shaft, No. 6 Seam, 7½ to 10½ ft. thick.
PO—Johnston City, Ill. SP—Same, CTY—Williamson. RR—C.&E.I., Mo. P. and Ill. Cent.
PR—J. Duggan, ... Peoria, Ill.
TR—P.H. Holland, .. Chicago, "
GM—P.H. Holland, " "
PA—P.H. Holland, " "
EE—Paul Cassidy, Johnston City, Ill.
S of H—Mules and 6 elec. loco. Track gauge 42 in.
S of M—Hand and 27 elec. mach.
PP—8 return tubular boilers, total 1,250 H. P., 2 gen. units, 250 volts, D.C.
EMP—500. Last fiscal year output 612,000 tons. Sales Agent, P.H. Holland, Chicago, Ill.

JONES & ADAMS COAL CO. (THE)
General Office, 1604 Steger Bldg., Chicago, Ill.
Peerless Mine, Shaft, No. 5 Seam, 5 ft. 8 in. thick.
PO—Springfield, Ill. SP—Same. CTY—Sangamon. RR—Springfield Terminal Ry.
PR—H. C. Adams,.....Chicago, Ill
TR—D.W. Heath, " "
PA—A.L. Ronan, " "
CE—F.A. Ray, ... Columbus, O.
EM—F. Payne. .... Springfield, Ill.
MM—James Shipps " "
EE—James Shipps, " "

MS—F.J. Devlin, . Springfield, Ill.
S of H—Mules and 3 elec. loco. Track gauge 42 in.
S of M—Solid shooting.
PP—5 return tubular boilers, total 750 H.P. 250 volts D.C., 1 pump.
EMP—497. Annual output, 500,000 tons.

JONES BROS. COAL CO.
Eureka Nos. 1 and 2 Mines, Shaft, No. 6 Seam, 5½ to 7 ft. thick.
PO—Marissa, Ill. SP—Same. CTY—St. Clair. RR—I.C.
PR—Jonathan Jones, Sr.....Marissa, Ill.
TR—Jonathan Jones, Sr... " "
GM—Wm. Jones, " "
SM—Wm. Jones, " "
MS—Wm. Jones, " "
S of H—Mules and rope. Track gauge 32 and 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 100 H. P., 1 pump.
EMP—234. Last fiscal year output 186,734 tons.

KERENS-DONNEWALD COAL CO.
General Office, 12th St. and Lucas Ave., St. Louis, Mo.
K. D. Mine, Shaft, No. 6 Seam 5 to 7½ ft. thick
PO—Worden, Ill. SP—Same. CTY—Madison. RR—L.&M., Wabash I. T.S.
GM—J. A. Jefferis.....St. Louis, Mo.
PA—J. A. Jefferis, " "

Continued on Next Page

MS—John Considine, .. Worden, Ill.
CE—L. B. Martin, ... Decatur, "
EM—M. D. Connard, " "
MM—Jos. Piper, ... Worden, "
EE—Jos. Piper, " "
S of H—1 Westinghouse elec. loco. and mules. Track gauge 36 in.
S of M—7 Elec. machines.
PP—4 boilers, 7 gen. units, 250 volts D.C. 1 pump.
EMP—196. Last fiscal year output 144,049 tons. Sales agent, J.A. Jeffreys, St. Louis, Mo.

KEYSTONE BIG MUDDY COAL & COKE CO.
Mine has been closed for two years.

KOLB COAL CO.
Shaft Mine; Seam 74 to 84 in. thick.
PO—Mascoutah, Ill.; RR—L. & H.
GM—P. M. Houcke.....St. Louis, Mo.
PR—E. R. Haglist....Mascoutha, Ill
TR—Henry Hucke, " "
GS—O. Klingenfus, " "
PA—O. Klingenfus, " "
MS—J. Killian, " "
MS—Jas. Hill, " "
MS—P. Legendre....New Athens, Ill.
S of H—6 Gasoline loco.
S of M—Hand and basoline loco.
EMP—300 to 500.

KORTKAMP COAL CO.
Out of business.

KRAFT, A. J.
Out of business.

KUHN COAL CO.
Dubois Mine, Shaft, No. 6 Seam, 6 ft. thick.
PO—Du Bois, Ill. SP—Same. CTY —Washington.
S of H—Mules.
S of M—Hand.
EMP—59. Last fiscal year output 17,280 tons. State report.

LAKE ERIE COAL AND MINING CO.
Lake Erie Mine, Drift, Seam 4 ft. 4 in. thick.
PO—Peoria, Ill. SP—Peoria, Ill. CTY —Peoria. RR—L.E.&W.
PR—F.R. Carter, ... Peoria, Ill.
GM—F.R. Carter, " "
PA—F.R. Carter, " "
MS—E. Rainey, " "
S of H—Rope and mules. Track gauge 33 in.
S of M—Hand.
PP—1 pump. Purchase power.
Last fiscal year output 10,500 tons.

LANCASTER LANDING & TRANS. CO.
Lancaster Landing No. 1, Drift, No. 5 Seam, 4½ ft. thick.
PO—Kingston Mines, Ill. SP—Mapleton, Ill. CTY—Peoria, Ill. RR—Illinois River.
PR—S.R. Jefford, Kingston Mines, Ill.
TR—John Lanan, " " "
GM—L.E. Robinson, " " "
MS—L.E. Robinson, " " "
PA—J. C. Firth, ... Peoria, Ill.
EM—E. Grandstaff, ... Pekin, "
S of H—Mules. Track gauge 35 in.
S of M—Hand.
EMP—45. Last fiscal year output 18,200 tons.

LANGWITH COAL CO.
See Mongomery Bros. & Langwith.

LA SALLE COUNTY CARBON CO.
General Office, La Salle, Ill.
PR—Richard P. Joy....Detroit, Mich.
TR—F. M. Dennis, " "
GM—H. S. Hazen.....La Salle, Ill.
GS—C. C. Swift, " "
PA—G. M. Wyatt, " "
EM—C. A. Herbert, " "
EE—Fred Brewer, " "
SCO—Union Stores Co., Buyer, T. E. Flanagan, La Salle, Ill.
Sales Agent, L. W. Smith, La Salle, Ill.

No. 1 Mine; Shaft; No. 2 Seam, 3 to 3½ ft. thick.
PO—La Salle, Ill., R. D. No. 24; SP Same; CTY—La Salle; RR—I. C., C. B. & Q.
MS—Adam Currie.....La Salle, Ill.
MF—J. D. Walsh, " "
S of H—2 Elec. loco. and mules; track gauge 40 in.
S of M—Hand.
PP—2 Erie, 2 Kewanee, 1 Frost return tubular boilers total 625 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—345. Last fiscal year output 170,736 tons.

No. 5 Mine, Shaft, No. 2 Seam, 3 to 3½ ft. thick.
PO—Cedar Point, Ill.; SP—Same; CTY —La Salle; RR—C. M. & St. P.
MS—Owen White....Cedar Point, Ill.
MF—Fred Marfel, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—6 Erie City, return tubular boilers total 750 H. P., 2 gen. units 250 volts D. C., 2 pumps.
EMP—379. Last fiscal year output 208,449 tons.

LATHAM MINING CO.
Latham Mine, Shaft; No. 5 Seam; 5 ft. to 5 ft. 4 in. thick.
PO—Lincoln, Ill.; SP—Same; CTY—Logan; RR—C. & A., I. C.
PP—Stuart Brown....Springfield, Ill.
TR—M. Coogan.....Lincoln, Ill.
GM—M. Coogan, " "
MS—M. Coogan, " "
PA—M. Coogan, " "
EM—Wm. Bresnan, " "
MM—John Wilmoth,.....Lincoln, Ill.
EE—C. Moran, " "
S of H—Mules and 4 elec loco.; track gauge 42 in.
S of M—Hand.
PP—6 Water tube boilers total 750 H. P., 1 gen. unit, 250 volts, D. C.; 3 pumps.
EMP—320. Last fiscal year output 108,000 ons.

LEFTON COAL CO.
Now part of Montour Coal Co.

LINCOLN MINING CO.
Lincoln Mine, Shaft, No. 5 Seam, 5½ ft. thick.
PO—Lincoln, Ill. SP—Same. CTY—Logan. RR—Chicago & Alton, Ill. Central.
PR—Walter Puterbough.....Lincoln, Ill.
TR—D. H. Harts, Jr. " "
GM—B. H. Armstrong, " "
PA—B. H. Armstrong, " "
MS—Geo. Evans, " "
MM—A. Swythmier, " "
S of H—Mules and rope.
S of M—Hand.
PP—2 pumps, 7 water tube boilers.
Sales Agent, B. H. Armstrong, Lincoln, Ill.

LIPPERT BROS.
PO—Millstadt, Ill.; CTY—St. Clair.
No report.

LITTLE MUDDY FUEL CO.
Little Muddy Mine, Shaft, No. 6 Seam, 6 ft. thick.
PO—Tamaroa, Ill. SP—Same. CTY — Perry.
S of H—Mules.
S of M—Hand.
EMP—98. Last fiscal year output, 22,780 tons. State report.

LOGAN COAL CO.
General Office, Peoria, Ill.
Logan Mine, Shaft, No. 5 Seam 4 ft. thick.
PO—Hanna City, Ill. SP—Same. CTY—Peoria. RR—M.&St.L.
PR—W.R. Coleman, ... Peoria, Ill.
GS—J.M. Tyson, " "
PA—J.M.Tyson.....Peoria, Ill.
EE—R. U. Tyson, " "
S of H—Mules and 3 elec. locomotives. Track gauge 3 ft.
S of M—11 Elec. machines.
PP—2 return tubular boilers, motor generator, 250 volts D.C., 1 pump. Power purchased.
EMP—175. Last fiscal year output 92,000 tons.

LOGAN, JOHN A., COAL CO.
Shaft Mine; No. 7 Seam, 60 to 90 in. thick.
PO—Hanaford, Ill.; SP—Logan, Ill.; CTY—Franklin; RR—I. C.
PR—W. J. Carney.....Chicago, Ill.
GM—W. J. Carney, " "
PA—W. J. Carney, " "
TR—J. J. Wright, " "
MS—W. G. Wilson.....Logan, Ill.
EM—Wm. Oliver.....Benton, Ill.
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—10 Elec. mach.
PP—4 Boilers, gen. unit, 250 volts D. C.

LOVINGTON COAL MINING CO.
No. 1 Mine; Shaft; No. 6 Seam, 102 to 114 in. thick.
PO—Lovington, Ill. SP—Same; CTY—Moultrie; RR—Wabash and Vandalia.
PR—J. M. Duncan.....Decatur, Ill
TR—John Benson, " "
GM—John Benson, " "
GS—H. C. Newcomb....Lovington, Ill.
MS—H. C. Newcomb, " "
PA—Wm. T. Kirkpatrick, " "
CE—E. J. Doolin, " "
EE—E. J. Doolin, " "
MM—John Roberts, " "
SCO—Address the Company " "
EM—W. J. Day.....Bement, "
S of H—Mules.
S of M—Hand.
PP—4 Atlas, 1 Springfield Marine water tube boiler, total, 750 H. P.; 1 compressor, 5 pumps.
EMP 195. Last fiscal year output, 146,770 tons.
Sales Agency, Jas. C. Stocks, Decatur, Ill.

LUMAGHI COAL CO.
General Office, Equitable bldg., St. Louis, Mo.
PR—L.F. Lumaghi, .. St. Louis, Mo.
GS—L.F. Lumaghi, " "
TR—J.D. Lumaghi, " "
GM—J.D. Lumaghi, " "
PA—A. C. Powell, " "
EM—A.C. Powell, " "
MM—J. Rapp, ... Collinsville, Ill.
EE—J. Rapp, " "
Sales agent, J. J. O'Donnell, St. Louis, Mo.
Mine No. 2, Shaft Mine, No. 7 Seam, 5½ to 10 ft. thick.
PO—Collinsville, Ill. SP—Same. CTY —Madison. RR—Vandalia.
MS—W. T. Scully, Collinsville, Ill.
S of H—4 elec. motors and mules. Track gauge 42¼ in.
S of M—25 elec. machines.
PP—6 return tubular Lyons & O'Brien, boilers, total 1250 H.P., 1 gen. unit, 250 D. C., 1 pump, delivering water to surface. Also purchase power.
EMP—475. Annual output, 350,000 tons.

Mine No. 3, Shaft Mine, No. 7 Seam, 5½ to 10 ft. thick.
PO—Collinsville, Ill. SP—Same. CTY—Madison. RR—Vandalia.
MS—Jas. McKernon, Collinsville, Ill.
S of H—Mules. Track gauge 38½ in.
S of M—18 Comp. air mach.
PP—4 Return tubular O'Brien & Wangler boilers, total 600 H. P., 1 comp., 1 pump delivering water to surface, also purchase power.
EMP—260. Annual output , 100,000 tons.

McLEAN COUNTY COAL CO.
McLean Mine, Shaft No. 2 Seam 3 ft. 8 in. to 4 ft. thick.
PO—Bloomington, Ill., SP—Same, CTY —McLean. RR—C.&A., Big 4 & L.E.&W.RR.
PR—Julia G. Scott....Bloomington, Ill.
TR—L.M. Graham, " "
PA—L.M. Graham, " "
GM—T.S. Bunn, " "
MS—Jo. Smith, " "
S of H—Rope and seam; track gauge 34½ in.
S of M—Hand.
PP—4 Wicks vertical Water tube boilers, total 800 H.P., 1 pump.
EMP—175. Last fiscal year output 65,000 tons.

McNEILL COAL COMPANY, THE
Stripping, Top Seam, 3 to 9 ft. thick.
PO—Carterville, Ill.; SP—Same; CTY—Williamson RR—Coal Belt.
PR—J.S. McNeil, .. Carterville, Ill.
TR—J.S. McNeil, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand.
EMP—6.

MADISON COAL CORPORATION.
General Office, Central Natl Bank Bldg, St. Louis, Mo.
PR—A.J. Moorshead, ..St. Louis, Mo.
GM—A.J. Moorshead, " "
TR—F.H. Wolfarth, " "
PA—J.G. Skidmore, " "
GS—A. W. Miller.....Dewmaine, Ill.
EE—A.J. Gurney, " "
EM—G.E.Lyman, Glen Carbon, "
MM—A.B. Schick, " " "
SCO—Stores Nos. 1 and 2. Buyer, I. L. Clark, Dewmaine, Ill.

Madison Nos. 8 and 9 Mines, Shafts, No. 6 Seam, 8 ft. thick.
PO—Dewmaine, Ill. SP—Carterville, Ill. CTY— Williamson. RR—Illinois Central, Paducah and Johnson City Branches.
MS—A.W. Miller, .. Dewmaine, Ill.
S of H—Mules and 4 elec. locomotives. Track gauge 42 and 44 in.
S of M—Hand and 6 Elec. mach.
PP—10 Brownell water tube boilers, 3 generating units, 250 volts D.C. 6 pumps.
EMP—850. Last fiscal year output 856,656 tons.

Madison No. 2 Mine, Shaft, No. 6 Seam, 5 to 6½ ft. thick.
PO—Glen Carbon, Ill. SP—Same. CTY —Madison. RR—Ill. Cent.
MS—A. Daenzer.....Glen Carbon, Ill.
S of H—Mules and 3 elec. loco. Track gauge 24 in.
S of M—32 Comp. air mach.
PP—7 return tubular boilers, 1 generating unit, 250 volts, A.C., 2 air compressors.
EMP—386. Last fiscal year output 322,291 tons.

Madison No. 5 Mine, Shaft, No. 6 seam, 8 ft. thick
PO—Mt. Olive, Ill. SP—Same. CTY—Macoupin. RR—Ill. Cent., Springfield Div.
MS—Geo. A. Simpson, ...Mt. Olive, Ill
S of H—2 Elec. loco. Track gauge 26 in.
S of M—20 Comp. air mach.
PP—1 Heine water tube boiler, 2 Brownell, and 3 Roban return tubular boilers, total 775 H.P., 8 generating units, 250 volts D.C. 2 air compressors, 1 pump.
EMP—304. Last fiscal year output 279,290 tons.

Madison No. 6 Mine, Shaft, No. 6 Seam, 8 ft thick.
PO—Divernon, Ill. SP—Same. CTY—Sangamon. RR—Ill. Cent., Springfield Div.
S of H—Mules and 2 elec. locomotives. Track gauge 42 in.
S of M—14 Elec. Machines.
PP—6 return tubular boilers, total 720 H.P., 7 generating units, 250 volts, D.C., 1 pump.
EMP—540. Last fiscal year output 403,284 tons.

MAJESTIC COAL & COKE CO.
General Office, Chicago, Ill.
Majestic Mine; Shaft; No. 6 Seam, 90 to 144 in. thick.
PO—DuQuoin, Ill. SP—Same. CTY—Perry. RR—Ill. Central.
PR—R.F. Church, ... Chicago, Ill.
TR—R.F. Church, " "
GM—E.C. Searls, ... DuQuoin, "
MS—F. S. Cousin, " "
S of H—6 Elec. loco. and mules; track gauge 36 in.
S of M—16 Elec. mach.
PP—6 Water tube and 6 return tubular boilers, total 1050 H. P., 2 gen. units 250 volts D. C., and 1 pump.
EMP—450. Last fiscal year output 472,000 tons.

MANUFACTURERS COAL CO.
Manufacturers Mine, Shaft, Second Seam, 34 in. thick.
PO—Marseilles, Ill.; SP—Same, CTY—LaSalle; RR—C. R. I. & P.
PR—R. F. Knott.....Marseilles, Ill.
TR—F. E. Smith, " "
GM—F. E. Smith, " "
PA—F. E. Smith, " "
MS—D. H. Cummings, " "
S of H—Mules; track gauge 24 and 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 180 H. P., 1 pump.
EMP—75.

MANUFACTURERS & CONSUMERS COAL CO.
Shaft Mine; No. 5 Seam, 4½ ft. thick.
PO—Decatur, Ill.; SP—Same; CTY—Macon; RR—I. C., Vandalia, Wab., C. H. & D.
GM—W. S. Ridgley.....Decatur, Ill.
PA—W. S. Ridgley, " "
MS—Louis White, " "
S of H—Mules.
S of M—Hand.
PP—4 Boilers total 500 H. P.
EMP—215. Last fiscal year output 114,361 tons.

MAPLETON COAL CO.
Mapleton Mine.
PO—Mapleton, Ill.; CTY—Peoria.
No report.

MAPLEWOOD COAL CO.
No. 1 Mine; Shaft; No. 5 Seam, 48 in. thick.
PO—Farmington, Ill.; SP—Same; CTY —Fulton; RR—M. & St. L.
PR—G. A. Ditewig.....Peoria, Ill.
GM—G. A. Ditewig, " "
TR—Jas. F. McElwee, " "
GS—Wm. Spanncy.....Farmington, Ill.
PA—W. C. Gill, " "
S of H—1 Elec. loco.
S of M—Hand.
PP—1 Water tube, 2 return tubular boilers, total 500 H. P., 2 pumps.

MARION COUNTY COAL CO.
Glenridge Mine, Shaft, No. 6 Seam, 7½ to 5 ft. thick.
PO—Centralia, SP—Glenridge, Ill.; CTY —Marion; RR—I. C., C. B. & Q.
PR—F. Kohl.....Centralia, Ill.
TR—H. Kohl, " "
GM—E. E. Fyke, " "
GS—E. E. Fyke, " "
PA—E. E. Fyke, " "
EM—Lee Haskins, " "
MM—Douglass Williams, Centralia, Ill.
EE—George Klein, " "
SCO—Glenridge Merc. Co., Buyer, C. H. Clements.
S of H—Mules and 3 elec. loco.; track gauge 36 in.
S of M—12 Elec. machines.
PP—1 Pump, 6 return tubular boilers, total 900 H. P., 2 gen. units, 250 volts, D. C.
EMP—450. Annual output 400,000 tons.

MARQUETTE COAL CO.
PO—Marquette, Ill.; CTY— Bureau.
No report.

MARQUETTE THIRD VEIN COAL MINING CO.
Going out of business.

MATTHIESSEN & HEGELER ZINC CO.
Shaft Mine, No. 5 Seam; 3½ to 5 ft. thick.
PO—La Salle, Ill.; SP—Same; CTY—La Salle; RR—L. S. & B. C.
PR—Mary Hegeler Carus....LaSalle, Ill.
PA—Address the Company.
MS—Jos. Brennemann....La Salle, Ill.
S of H—1 Elec. loco.; track gauge 41¼ in.
S of M—Hand.
PP—220 volts D C. from Central Station.
EMP—135. Last years output 158,940 tons.
Mine coal for their own use.

MAULE COAL & MNG. CO.
Out of business.

MEEK, T. M., COAL CO.
Sold to the Egyptian Coal & Coke Co.

MENARD COUNTY COAL & MINING CO.
Mine abandoned.

MIDDLE FORK MINING CO.
Middle Fork Mine; Shaft; No. 6 Seam, 84 to 120 in. thick.
PO—Benton, Ill; SP—Same; CTY—Franklin; RR—C. & E. I., I. C., Mo. P.
PR—J. M. Seymour.....Benton, Ill.
GM—J. M. Seymour, " "
PA—J. M. Seymour, " "
MS—J. M. Seymour, " "
TR—Robert R. Ward, " "
EM—L. T. Putnam, " "
CE—Allen & Garcia.....Chicago, Ill.
Sales Agent, J. M. Seymour..Benton, Ill.
New operation, now being equipped, June 15

MIDDLE STATES COAL CORPORATION
General Office, Marquette Bldg., Chicago, Ill.
PR—T. J. O'Gara.....Chicago, Ill.
PA—H. C. Barnebee, " "
CS—E. Le Ghent....Terre Haute, Ind.
EM—W. E. Buss, " "
Sales Agent, J. P. MacFarland, Chicago, Ill.

O'Gara No. 26 Mine, Shaft; No. 5 Seam 5 ft. 10 in. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—B. & O., Ill. traction system.
MS—R. Neeson.....Springfield, Ill.
S of H—1 Elec. loco.; track gauge 35½ in.
S of M—Hand.
PP—Power purchased.
EMP—175.

Greenridge No. 27 Mine; Shaft; Seam 6 to 8 ft. thick.
PO—Greenridge, Ill.; SP—Girard, Ill.; CTY—Macoupin; RR— C. & A.
MS—R. Neeson.....Springfield, Ill.
SM—S. McCranes.....Girard, Ill.
S of H—Elec. loco.
S of M—Hand.
PP—3 Erie City return tubular boilers, 1 pump.
EMP—350. Output per day 1200 tons average.

MINONK COAL CO.
No. 2 Mine; Shaft; No. 2 Seam, 3 ft. thick.
PO—Minonk, Ill.; SP—Same; CTY—Woodford.
S of H—Mules.
S of M—Hand.
EMP—157. Last fiscal year output 61,344 tons.
State report.

MISSION MINING CO.
Stripping Mine; No. 7 Seam, 68 to 72 in. thick.
PO—Danville, Ill.; SP—Same; CTY—Vermillion; RR—Big Four.
PR—W. G. Hartshorn....Danville, Ill.
GM—W. G. Hartshorn, " "
TR—John G. Hartshorn, " "
S of H—1 Steam loco. and rope.
S of M—Steam shovels.
PP—Power purchased.
EMP—75.
Successors to the Gray Coal Co.

MISSIONFIELD COAL CO.
PR—W. G. Hartshorn....Danville, Ill.
TR—J. G. Hartshorn, " "
GM—W. G. Hartshorn, " "
PA—E. H. Johson, " "
EM—J. C. Anderson, " "
EE—Charles Arkett, " "
SCO—Hartshorn Bros., Buyer, J. G. Hartshorn.
Danville No. 2 Mine; Slope; No. 7 Seam, 5 ft. 10 in. to 6 ft. 4 in. thick.
PO—Danville, Ill.; SP— Oakwood, Ill. CTY—Vermilion; RR—Big Four.
MS—Geo. Anderson.....Danville, Ill.
S of H—Mules and 1 Elec. loco.; track gauge 36 in.
S of M—4 Elec. mach.
PP—2 Pumps. Buy power.
EMP..125. Last fiscal year output 100,000 tons.

No. 3 Mine, Slope, No. 7 Seam, 5 ft. 10 in. to 6 ft. 4 in. thick.
PO—Danville, Ill.; SP—Oakwood, Ill. CTY—Vermilion; RR—Big Four.
MS—Alex. Anderson
Oakwood, Ill., R. F. D. No. 3
S of H—Mules and 1 Elec. loco.; track gauge 36 in.
S of M—4 Elec. chain mach.
PP—Purchase power.
EMP—125. Last fiscal year output 100,000 tons.

MISSOURI & ILLINOIS COAL CO.
General Office, St. Louis, Mo.
GM—W. S. Scott, 407 Bdwy., St. Louis, Mo.
PA—W. S. Scott,, 407 Bdwy., St. Louis, Mo.

Wilderman Mine.
PO—Willisville, Ill.; SP—Same; CTY—Perry; RR—I. C.
S of H—Mules.
S of M—Comp. air.
EMP—75.

St. Clair Mine.
PO—Freeburg, Ill.; SP—Same; CTY—St. Clair; RR—I. C.
S of H—Mules.
S of M—Hand.
EMP—75.

Rentchler Mine.
PO—Rentchler, Ill.; SP—Same; CTY—St. Clair; RR—L. & N.
S of H—Elec.
S of M—Elec.
EMP—125.
Willisville Mine.
PO—Willisvile, Ill.; SP—Same; CTY—Perry; RR—M. & O.
S of H—Elec.
S of M—Elec.
EMP—150.

MOFFAT COAL CO.
No. 1 Mine, Shaft, No. 6 Seam.
PO—Sparta, Ill.; SP—Same; CTY—Randolph; RR—Mobile & Ohio.
PR—Thos. Moffat.....Sparta, Ill.
GM—Thos. Moffat, " "
PA—J. D. Moffat, " "
MS—R. E. Moffat, " "
S of H—Mules.
S of M—Comp. air.
PP—4 Boilers total 600 H. P.

MONMOUTH COAL MINING CO.
Brereton Shaft No. 1 ,No. 5 Seam, 5 to 4½ ft. thick.
PO—Brereton, Ill., SP—Norris, Ill.; CTY—Fulton; RR—C. B. & Q., Buda-Carton-Rushville Br.
PR—W. J. Spencer.....Brereton, Ill.
TR—J. P. Daily, " "
GM—W. J. Spencer, " "
PA—W. H. Trudgen, " "
EM—C. P. Jacobson, " "
GS—C. P. Jacobson, " "
EE—Harvey Williams ...Canton, Ill.
MM—Geo. L. Luther, " "
SCO—Brereton Merc. Co., Buyer, J. P. Daily.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—2 Water tube, 2 return tubular boilers, Kewanee, Ottumwa and Frost makes, total 550 H. P., 2 gen. units, 1-110 polts, D. C. and 1-250 volts, D. C., 1 pump.
EMP—343. Annual output, 140,757 tons.
Sales Agent, C. W. Hulit, Brereton, Ill.

MONTGOMERY BROS. & LANGWITH.
Langwith Mine; Shaft; No. 7 Seam, 78 in. thick.
PO—Pinckneyville, Ill.; SP—Same; CTY—Perry; RR—W. C. & W.
PR—John Montgomery, Pinckneyville, Ill.
TR—Wm. Montgomery, " "
MS—Henry Langwith, " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, 25 H. P.
EMP—5 Last fiscal year output, 2,000 tons.
Successors to the Langwith Coal Co.

MONTGOMERY COUNTY COAL CO.
See Peabody Coal Co.

MONTOUR COAL CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
PR—W. K. Field, ...Pittsburgh, Pa.
TR—Wm. Miller, " "
GM—George W. Schluederberg, Pittsburgh, Pa.
PA—F. E. Now, ...Pittsburgh, Pa.
GS—Arthur Neale.....Girard, Ill.
Sales Agency, Pittsburgh Coal Co., Chicago, Ill.
Virden Mine; Shaft; No. 6 Seam, 72 to 96 in. thick.
PO—Virden, Ill.; SP—Same. CTY—Macoupin; RR—C. B. & Q., C. & A.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—10 Elec. mach.
PP—8 Return tubular boilers, total 1,000 H.P., 2 gen. units 275 volts D. C., 1 pump.
EMP—300.
Girard Mine, Shaft; No. 6 Seam, 72 to 96 in. thick.
PO—Girard, Ill.; SP—Same: CTY—Macoupin; RR—C. B. & Q., C. A.
S of H—2 Elec. loco. and mules.
S of M—Hand.
PP—5 Return tubular boilers, total 600 H. P., gen. unit 275 volts D. C., 1 pump.
EMP—370.
Auburn Mine; Shaft; No. 6 Seam, 84 in. thick.
PO—Auburn, Ill.; SP—Same; CTY—Sangamon; RR—C. & A.
S of H—Rope and mules; track gauge 31 in.
S of M—Hand.
PP—3 Return tubular boilers, total 360 H. P., 1 pump.
EMP—90.
Note—Idle November 1st.
Springfield Mine; Shaft; No. 5 Seam, 72 in. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—C. & A., C. P. & St. L.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 300 H.P., 2 gen. units 275 volts D. C., 2 pumps.
EMP—190.
Successors to the Illinois Collieries Co.

MORRIS, JOS., COAL CO.,
Out of business.

MOUNT PULASKI COLLIERY CO.
Succeeded by Home Miners' Co., of Mt. Pulaski.

MT. OLIVE & STAUNTON COAL CO.
General Office, Staunton, Ill.
GM—T. T. Brewster.....St. Louis, Mo.
PA—T. T. Brewster, " "
EM—H. M. Killmar..Staunton, Ill.

Mine No. 1; Shaft; No. 6 Seam, 60 to 78 in. thick.
PO—Staunton, Ill.; SP—Same; CTY—Macoupin; RR—L. M.
MS—Hugh Wilson.....Staunton, Ill.
S of H—2 Elec. loco. and mules; track gauge 26 in.
S of M—7 Elec. mach.
PP—4 O'Brien return tubular boilers, total 500 H. P., 2 gen. units 250 volts D. C., 1 pump.

No. 2 Mine; Shaft; No. 6 Seam, 75 to 86 in. thick.
PO—Williamson, Ill. SP—Same—CTY—Madison; RR—L. & M.
MS—John Westwood, Staunton, Ill., R. D. No. 15.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—15 Elec. mach.
PP—5 O'Brien return tubular boilers, total 750 H. P., 2 gen. units, 250 volt D. C., 1 pump.
EMP—560. Last fiscal year output 665,628 tons.

MOUNT VERNON COAL CO.
Mount Vernon Mine; Shaft; No. 7 Seam, 5 ft. thick.
PO—Mt. Vernon, Ill.; SP—Same; CTY—Jefferson.
S of H—Mules.
to 7½ ft. thick.
EMP—45. Last fiscal year output 7,958 tons.
State report.

MOWEAQUA COAL MINING & MANFG. CO., (THE)
Mine No. 1, Shaft, No. 5 Seam, 6 to 5 ft. thick.
PO—Moweaqua, Ill.; SP— Same, CTY—Shelby; RR—Main Line.I.C. Ry.
PR—Geo. A. Kautz....Moweaqua, Ill.
TR—R. W. Snyder, " "
GS—Chas. Ahl, " "
PA—Chas. Ahl, " "
EE—Wm. Heriot, " "
SM—John D. Wolf, " "
GM—S. A. Shafer....Assumption, Ill.
EM—Glen. A. Shafer.....Pana, Ill.
S of H—Mules and 1 elec. loco.; track gauge 40 in.
S of M—8 Elec. machines.
PP—4 Return tubular boiler, total 320 H. P., 1 gen. unit 250 volts D. C.
EMP—100. Annual output 50,000 tons
Sales Agent, N. B. Stores.

MUDDY VALLEY MINING CO.
Succeeded by Jackson Coal Co.

MULBERRY HILL COAL CO.
Mulberry Hill Mine; Shaft; No. 6 Seam, 7 ft. thick.
PO—Freeburg, Ill.; SP—Same CTY—St. Clair.
S of H—Mules.
S of M—Elec. mach. and hand.
EMP—86. Last fiscal year output 40,440 tons.
State report.

MURPHY, LINSKEY & KASHER COAL CO.
General Office, Braidwood, Ill.
PR—John Murphy.....Braidwood, Ill.
TR—John Murphy, " "
GM—John Murphy, " "
GS—John Murphy, " "
PA—F. J. Linskey, " "
EM—T. Linskey, " "
MM—Thos. Dudac, " "
Sales Agent, P. J. Linskey.

M., L. & K. Mine, Shaft, No. 6 Seam, 3 ft. thick.
PO—Braidwood, Ill.; SP—Same, CTY—Will; RR—C. & A.
MS—Thos. Kasher.
S of H—Mules; track gauge 28 in.
S of M—Hand.
PP—2 Return tubular boilers.

M., L. & K. Mine, Shaft, No. 6 Seam, 5 ft. thick.
PO—Pontiac, SP—Same, CTY—Livingston; RR—C. & A., I. C. & Wat
MS—Thos. Kasher.
S of H—Mules; track gauge 32. in
S of M—Hand.
PP—1 Return tubular boiler.

NATIONAL COAL MINING CO.
National Mine; Shaft; No. 5 Seam, 48 in. thick.
PO—Farmington, Ill.; SP—Middle Grove, Ill.; CTY—Fulton; RR—M. & St. L.
PR—L. D. Fletcher..Yates City, Ill.
TR—H. A. Sloan,
GM—T. McMorrow...Farmington, Ill.
PA—T. McMorrow, " "
GS—T. McMorrow, " "
MS—Nick Connell, " "
MM—Thos. Herron, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Water tube boilers, total 250 H. P., 1 pump.
EMP—175.
Sales Agent, J. H. Duffy.

NEW ENTERPRISE COAL CO.
General Office, Chicago, Ill.
New Enterprise Mine, Stripping, No. 6 Seam, 6 to 8 ft. thick.
PO—Marion, Ill.; SP—Herrin and Marion, Ill., CTY—Williamson; RR—C. B. & Q. and Mo. Pac.
PR—A. B. McLaren....Marion, Ill.
TR—F. C. Honnold, Fisher Bldg., Chicago, Ill.
GM—F. C. Honnold, Fisher Bldg., Chicago, Ill.
GS—A. B. McLaren.....Marion, Ill.
PA—A. B. McLaren, " "
EM—Roy Adams.....Herrin, Ill.
MM—Wm. Dawkins.....Marion, Ill.
EE—Wm. Johnson, " "
S of H—1 Steam loco., track gauge 4 ft. 8½ in.
S of M—Steam shovels.
PP—Power furnished from Public Service Co.
EMP—20.
Sales Agent, O. M. Burnell, Chicago, Ill.

NEW NATIONAL COAL & MINING CO.
New National Mine, Shaft, 6½ ft. thick.
PO—Belleville, Ill., SP—Same CTY—St. Clair; RR—I. C. Ry.
PR—A. L. Wright.....Belleville, Ill.
TR—Henry Peters, " "
GM—Chas. Pointon, " "
PA—Chas. Pointon, " "
EM—Wm. Groom,.....Belleville, Ill.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—Boiler 90 H. P., 1 pump.
EMP—40. Last fiscal year output 25,250 tons.

NEW STAUNTON COAL CO.
General Office, St. Louis, Mo.
No. 1 Mine; Shaft; No. 6 Seam, 72 in. thick.
PO—Livingston, Ill.; SP—Same; CTY—Madison; RR—C. & E. I., Big Four.
PR—J. E. Rutledge.....St. Louis, Mo.
GM—J. E. Rutledge, " "
TR—Charles Gilbert, " "
PA—C. E. House.....Livingston, Ill.
EM—J. A. Hebenstreit, " "
MS—T. G. Hebenstreit, " "
EE—Herman Becker. " "
S of H—3 Elec. loco. and mules; track gauge, 42 in.
S of M—17 Elec. mach.

Continued on Next Page.

PP—8 Return tubular boilers, total 1,000 H. P., 3 gen. units, 250 volts D. C., 1 pump.
EMP—675. Last fiscal year output, 805,752 tons.
Sales Agency, Rutledge & Taylor Coal Co., St. Louis, Mo.

NEWSAM BROS.
No. 3 Mine; Shaft; Seam 4½ ft. thick.
PO—Kingston Mines, Ill., and Peoria, Ill.; SP—Same; CTY—Peoria.
S of H—Elec. loco.
S of M—Hand.
EMP—128. Last fiscal year output, 108,233 tons.
State report.

NICHOLSON COAL CO.
Nashville, Shaft; 5½ ft. to 6 ft. thick.
PO—Nashville, Ill. SP—Same; CTY—Washington; RR—L. & N.
GM—T. A. Nicholson.....Nahville, Ill.
PA—T. A. Nicholson, " "
MS—L. R. Nicholson, " "
S of H—Mules; track gauge 24 in.
S of M—Hand.
PP—Boiler, Wrangler, total 175 H. P.
EMP—47. Last fiscal year output 32,300 tons.

NOKOMIS COAL CO.
General Office, Security Bldg., St. Louis, Mo.
No. 1 Mine; Shaft; No. 6 Seam, 8 ft. 4 in. to 8 ft. 6 in. thick.
PO—Nokomis, Ill.; SP—Same; CTY—Montgomery; RR—Big Four, C. & E. I.
PR—J. E. Rutledge....St. Louis, Mo.
GM—J. E. Rutledge, " "
TR—A. J. Nason.....St. Paul, Minn.
PA—W. J. Whitaker.....St. Louis, Mo.
GS—J. P. Hebenstreit....Nokomis, Ill.
S of H—3 storage battery loco; track gauge 42 in.
S of M—10 Sullivan Elec. mach.
PP—4 Brownell return tubular boilers, total 700 H. P., 240 volts A. C., 3 phase 60 cycles. Power purchased.
EMP—300. Last fiscal year output 200,306.90 tons.

NORRIS CITY COAL COMPANY.
Norris City Mine No. 1, Shaft; No. 7 Seam; 4½ to 6 ft. thick.
PO—Norris City, Ill.; SP—Same; CTY—White; RR—B. & O., S. W.—Springfield Div.
PR—Dr. R. B. Lemmon, Norris City, Ill.
TR—W. H. Gossett, " "
MS—J. F. McQuay, " "
PA—A. D. Barnes, " "
EM—H. B. Hill, " "
S of H—Mules; track gauge 36 in.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, 1-Heilman, 1-O'Brien, total 250 H. P., 1 engine 125 H. P., 250 volts, D. C.; 2 pumps.
EMP—55. Last fiscal year output 31,686 tons.
Sales Agent, J. D. Gossett, Norris City, Ill.

NORRIS COAL MINING CO.
General Office, Davenport, Iowa.
Norris Mine, Shaft, No. 5 Seam, 4 ft. thick.
PO—Norris, Ill., SP—Same, CTY—Fulton; RR—C. B. & Q.
PR—A. E. Walsh....Davenport, Iowa.
TR—C. H. Walsh....Burlington, Iowa.
GM—E. J. Walsh....Davenport, Iowa.
GS—Joseph Quigley.....Canton, Ill.
EM—Joseph Quigley, " "
PA—A. E. Whitehead....Norris, Ill.
MM—C. M. Geer, " "
S of H—Mules; track gauge 32 in.
S of M—Hand.
PP—3 Return tubular boilers, total 300 H. P., 1 pump.
EMP—250. Last fiscal year output 134,000 tons.
Sales Agent, Wm. Ley, Davenport, Iowa.

NORTH BREESE COAL & MNG CO.
North Mine, Shaft; No. 6 Seam; 6 to 8 ft. thick.
PO—Breese, Ill.; SP—Same; CTY—Clinton; RR—B. & O., and S. W., main line.
PR—Chas Schrocter, South Side Bank Bldg., St. Louis, Mo.
GM—John Schrocter, South Side Bank Bldg., St. Louis, Mo.
PA—John Schrocter, South Side Bank Bldg., St. Louis, Mo.
TR—A. J. Tilden, South Side Bank Bldg., St. Louis, Mo.
MS—F. A. W. Lewin.....Breese, Ill.
EM—John Gibson.....Duquoin, Ill.
EE—Chas. Casey.....Breese, Ill.
S of H—Mules, and 2-12 ton elec. loco.; track gauge 40 in.
S of M—14 Elec. mach.
PP—2 Brownell and 4 Erie City Return tubular boilers total 960 tons, 1 gen. uint, 275 volts, D. C., 1 pump.
EMP—300. Last fiscal year output 256,180 tons.
Sales Agent, John Schrocter, South Side Bank Bldg., St. Louis, Mo.

NORTHERN COAL & SUPPLY CO.
General Office, Peoples Gas Bldg., Chicago, Ill.
1 Mine in Illinois, 1 Mine in Indiana.
Sorento Mine; Shaft; No. 5 Seam, 5½ to 6½ ft. thick.
PO—Sorento, Ill.; SP—Same; CTY—Bond; RR—C. B. & Q., T. St. L. & W.
PR—W. R. Tapper.....Chicago, Ill.
TR—J. H. Harmon, " "
GM—J. H. Harmon, " "
PA—J. H. Harmon.....Chicago, Ill.
MS—Jas. Phillips.....Sorento, Ill.
S of H—Rope and mules; track gauge 26 in.
S of M—Hand.
PP—5 Boilers, total 750 H. P., 5 gen. units; 2 pumps.
Sales Agent, J. H. Harmon, Chicago.
Note—Mine closed indefinitely since April 1st, 1914.

OAKDALE COAL MINING CO.
Oakdale Mine; Shaft; Seam 72 to 80 in. thick.
PO—Belleville, Ill.; SP—Same; CTY—St. Clair; RR—L. & N.
PR—Chas. Rowland, ...Belleville, Ill.
TR—Enos Harding, " "
GM—Enos Harding, " "
PA—Enos Harding, " "
MS—Enos Harding, " "
S of H—1 Elec. loco.; track gauge 24 in.
S of M—Hand.
PP—4 Return tubular boilers, 1 gen. unit 275 volts A. C., 1 pump.
EMP—28. Last fiscal year output 36,302 tons.
Sales Agency, Glendale Coal Co. and St. Louis Coal Co., St. Louis, Mo.

ODIN COAL CO.
Odin Mine; Shaft; No. 6 Seam, ft. thick.
PO—Odin, Ill; SP—Same; CTY—Marion; RR—B. & O., S. W.
GM—C. H. Morrison.....Odin, Ill.
PA—C. H. Morrison, " "
MS—G. A. Smith, " "
S of H—Elec. loco.
S of M—Elec. mach.
PP—4 Boilers, gen. units 250 volts D. C.
EMP—215.

O'GARA COAL CO.
General Office, Marquette Bldg., Chicago, Ill.
PR—T. J. O'Gara.....Chicago, Ill.
TR—T. S. Jones, " "
PA—H. C. Barnabee....Harrisburg, Ill.
GS—Edward Ghent, " "
EM—R. D. Brown,
MM—C. W. Dixon, " "
EE—M. K. Fletcher, " "
Store Buyer, H. C. Barnebee.
Store Mgr., A. M. Stone.
Sales Agent, J. R. McFarland, Marquette Bldg., Chicago, Ill.

No. 1 O'Gara, Shaft, No. 5 Seam, 4½ to 6 ft. thick.
PO—Harrisburg, Ill., SP—Same. CTY—Saline; RR—C. C. C. & St. L.
MS—F. J. Kessner,..Harrisburg, Ill.
S of H—Mules; 2 Elec. loco.; track gauge 40 in.
S of M—10 Elec. machines.
PP—4 Return tubular boilers, total 600 H. P., 1 gen. unit, 250 volts, D. C., 2 pumps.
EMP—250. Last fiscal year output 230,000 tons.

No. 3 O'Gara, Shaft, No. 5 Seam, 5 to 7 ft. thick.
PO—Harrisburg, Ill., SP—Same. CTY—Saline; RR—Big Four.
MS—W. H. Strickland..Harrisburg, Ill.
S of H—Mules; 2 elec. loco., track gauge 36 in.
S of M—12 Elec. machines.
PP—6 Return tubular boilers, total 900 H. P., 3 gen. units, 250 volts D. C., 2 pumps.
EMP—300. Last fiscal year output 250,000 tons.

No. 4 O'Gara, Shaft, No. 5 Seam, 5½ to 7¼ ft. thick.
PO—Harrisburg, Ill.: SP—Same, CTY—Saline; RR—Big Four.
MS—John Howell.....Harrisburg, Ill.
S of H—Mules; 2 elec. loco., track gauge 41 in.
S of M—12 Elec. mach. and hand.
PP—4 Return tubular boilers, total 600 H. P., 1 pump.
EMP—325. Last fiscal year output 290,000 tons.

No. 7 O'Gara, Shaft, No. 5 Seam, 5½ to 6½ ft. thick.
PO—Harrisburg, Ill., SP—Carrier Mills, Ill., CTY—Saline; RR—Big Four
MS—Wiliam Evans....Harrisburg, Ill.
S of H—Mules. 1 elec. loco. Track gauge 42 in.
S of M—6 Elec. machines.
PP—2 return tubular boilers, total 300 H.P., 1 gen, unit, 250 volts, 1 pump.
EMP—200. Last fiscal year output 130,000 tons.

No. 8 O'Gara, Shaft, No. 5 Seam, 4 to 5 ft. thick.
PO—Eldorado, Ill. SP—Same. CTY—Saline. RR—C. C. C. & St. L.
MS—Geo. Bagwell, .. .Eldorado, Ill.
S of H—Mules, 2 elec. loco. Track gauge 40 in.
S of M—8 Elec. machines.
PP—4 return tubular boilers, total 600 H.P., 1 gen. unit, 250 volts D. C., 2 pumps.
EMP—200. Last fiscal year output 125,000 tons.

No. 9 O'Gara, Shaft, No. 5 Seam, 5½ to 7 ft. thick.
PO—Harrisburg, Ill. SP—Same. CTY—Saline. RR—Big Four.
MS—J. J. Morris, ... Harrisburg, Ill.
S of H—Mules, 3 elec. loco. Track gauge 36 in.
S of M—15 elec. machines.
PP—5 return tubular boilers, total 750 H.P., 2 gen. units, 250 volts D. C., 3 pumps.
EMP—450. Last fiscal year output 475,000 tons.

No. 12 O'Gara, Shaft, No. 5 Seam, 4½ to 5½ ft. thick.
PO—Harrisburg, Ill. SP—Same. CTY—Saline. RR—Big Four.
MS—J. J. Morris, ... Harrisburg, Ill.
S of H—Mules. 1 elec. loco. Track gauge 36 in.
S of M—6 elec. machines.
PP—4 return tubular boilers, total 600 H.P., 1 Gen. unit, 250 volts D. C., 2 pumps.
EMP—215. Last fiscal year output 135,000 tons.

No. 14 O'Gara, Shaft, No. 5 Seam, 5 to 7½ ft. thick.
PO—Harrisburg, Ill., SP—Ledford, Ill. CTY—Saline. RR—Big Four.
MS—Wm. Evans, ... Harrisburg, Ill.
S of H—Mules, 2 elec. loco. Track gauge 42 in.
S of M—10 elec. machines.
PP—5 return tubular boilers, total 750 H.P., 1 gen. unit, 250 volts D. C. 2 pumps.
EMP—325. Last fiscal year output 290,000 tons.

Nos. 10 and 11, O'Gara, Shafts, No. 5 Seam, 4 to 5 ft. thick.
PO—Eldorado, Ill. SP—Same. CTY—Saline. RR—Big Four and I.C. R.R.
MS—Geo. Bagwell, .. Harrisburg, Ill.
S of H—Mules and 3 elec. loco. Track gauge 42 in.
S of M—18 elec. mining machines.
PP—8 return tubular boilers, total 1,200 H.P., 2 gen. units, 250 volts, D.C., 2 pumps.
EMP—485. Last fiscal year output 384,000 tons.

No. 15, O'Gara, Shaft, No. 5 Seam, 4½ to 6½ ft. thick.
PO—Harrisburg, Ill. SP—Carrier Mills, Ill. CTY—Saline. RR—Big Four.
MS—Wm. Evans, .. Harrisburg. Ill.
S of H—Mules and 2 elec. loco. Track gauge 42 in.
S of M—8 Elec. mining machines.
PP—4 return tubular boilers, total 600 H.P., 1 gen. unit. 250 volts D. C., 2 pumps.
EMP—300. Last fiscal year output 267,000 tons.

OGLESBY COAL CO.
Oglesby Mine, Shaft, Seam No. 2, 5 to 2 ft. thick.
PO—Oglesby, Ill. SP—Same. CTY—La Salle. RR—C. M. & St. P., Ill. Cent.
PR—E. T. Bent, ... Oglesby, Ill.
TR—H. A. Bent, ... Oglesby, Ill
PA—J. R. Bent, " "
GS—J. R. Bent, " "
SCO—Bent Brothers, buyer, C. W. Woodward.
SM—A. M. Corbus, ... Oglesby, Ill.
S of H—Mules and 2 elec. loco. Track gauge 37 in.
S of M—Hand.
PP—6 return tubular boilers, total 900 H.P., Gen., 250 volts D.C..
EMP—500. Last fiscal year output 167,830 tons.

OLD BEN MINING CORPORATION.
General Office, Chicago, Ill.
Old Ben Nos. 8 and 9, Spiralizer washery, Shaft, No. 6 Seams, 9 to 12 ft. thick.
PO—West Frankfort, Ill.; SP—Same; CTY—Franklin. RR—C. & E. I., C. B. & Q., and I. C.
PR—D. W. Buchanan.....Chicago, Ill.
TR—Gordon Buchanan, " "
PA—P. W. Beda, " "
MS—James Dunn, West Frankfort, Ill.
SCO—Coalfield Co....W. Frankfort, Ill.
S of H—22 Elec. loco.; track gauge 42 in.
S of M—56 Elec. mach.
PP—4 Water tube and 8 return tubular boilers, total 2800 H. P., 450 K. W. 250 volts D. C., 1 pump.
EMP—1500. Last fiscal year output 1,169,000 tons.

No. 9 Mine developing all last year.
Sales Agencies, Buchanan Coal Co., Chicago, Ill.; Omaha, Neb., and Minneapolis, Minn.; Petit Coal Co., Milwaukee, Wis.

OLYMPIA COAL & MINING CO.
Out of business.

OHIO VALLEY MINING CO.
See Old Ben Mining Co

PANA COAL CO.
Mines Nos. 1 and 2, Shafts, No. 6 Seam, 7 ft. thick.
PO—Pana, Ill. SP—Same. CTY—Christian. RR—I. C., Big Four, C. E. I. & B. & O. S. W.
James M. Taylor and Francis R. Roberts, Receivers, Taylorville, Ill.
PR—S. A. Shafer, ... Pana, Ill.
TR—J. L. Long ..... Pana Ill
S of H—2 elec. loco. Track gauge 42 in.
S of M—Hand.
PP—5 return tubular O'Brien boilers, total, 625 H.P., 1 gen. unit, 250 volts D.C.

PARADISE COAL CO.
Paradise Mine; Shaft; No. 6 Seam. 92 to 122 in. thick.
PO—Du Quoin, Ill: SP Paradise, Ill.; CTY—Perry; RR—I. C., Eldorado Div.
PR—J. H. Forester.....DuQuoin, Ill.
GM—James Forester, " "
PA—James Forester, " "
VP—James Forester, Hallidayboro, "
TR—H. W. Tolle, ... Cairo, "
MS—R. J. Forrester, .. Du Quoin, "
EM—R. J. Forrester, " "
EE—C. C. Jackson, " "
S of H—Mules and 5 elec. loco. Track gauge 3 ft.
S of M—11. Elec. mach.
PP—5 Return tubular boilers, total 650 H.P., 3 gen. units, 250 volts, D.C., 1 pump.
EMP—350. Last fiscal year output 240,000 tons.
Sales Agent, Wickham Coal Co., St. Louis, Mo.

PEABODY COAL CO.
General Office, 332 So. Michigan Ave., Chicago, Ill.
PR—F. S. Peabody, ...Chicago, Ill.
VPR—C. J. Gray, " "
TR—J. D. Adams, " "
GM—W. H. Leland, " "
PA—H. E. Campbell, " "
Chief EM—M. F. Peltier, " "
EE—Carl Lee, ...Nokomis, Ill.
Div. Supt.—H. M. Young, Taylorville.
Div. Supt.—J. E. Brennan, Nokomis, Ill.
Sales Mgr., S. Peabody, Chicago, Ill.

Marion Nos. 2 and 3 Mines; Shaft; No. 6 Seam, 102 in. thick.
PO—Marion, Ill.; SP—Peabody Mines Nos. 2 and 3, Ill.; CTY—Williamson; RR—C. & E. I., C. B. & Q., Iron Mtn.
MS—John G. Thomas, Marion, Ill.
S of H—5 Elec. loco and mules; track gauge 40 and 42 in.
S of M—30 Elec. mach.
PP—6 Return tubular boilers, total 1500 H.P., 3 gen. united 250 volts D.C., 5 pumps.
Emp—676; Last fiscal year output 712,000 tons.

Pawnee No. 5 Mine; Shaft; No. 6 Seam, 89 in. thick.
PO—Pawnee, Ill.; SP—Same; CTY—Sangamon; RR—C. & I. M.
MS—H. E. Wilson,.....Pawnee, Ill.
S of H—2 15-ton elec. loco. and mules; track gauge 40 in.
S of M—Hand.
PP—4 Return tubular boilers total 1000 H.P., 2 gen. units 250 volts D.C., 1 pump.
EMP—342; last fiscal year output 495,000 tons.

Sherman No. 6 Mine; Shaft, No. 5 Seam, 72 in. thick.
PO—Sherman, Ill.; SP—Same; CTY—Sangamon; RR—C. & A., Peabody Switch.
MS—M. White, Sherman, Ill.
S of H—3 Gasoline loco.; track gauge 42 in.
S of M—Hand.
PP—3 Return tubular boilers, total 750 H.P., 1 pump.
EMP—346; Last fiscal year output 355,000 tons.

Continued on Next Page.

PEABODY COAL CO.—CONTINUED.

Kincaid No. 7 Mine; Shaft; No. 6 Seam, 90 in. thick.
PO—Taylorville, Ill.; SP—Kincaid, Ill.; CTY—Christian; RR—C. & I. M.
MS—R. E. McLain, Taylorville, Ill.
S of H—15 Elec. loco.; track gauge 42 in.
S of M—20 Elec. mach.
PP—2- 400 K. W. M. G. Sets, 2300 volts A. C., 250 volts D.C., 1 flywheel set, one 1000 H.P. hoist motor, 3 phase, 60 cycles, 1 pump; power purchased at 2300 volts A.C.
Last fiscal year output 180,000 tons. Developing.

Kincaid No. 8 Mine; Shaft; No. 6 Seam, 90 in. thick.
PO—Taylorville, Ill.; SP—Humphreys, Ill.; CTY—Christian; RR—C. & I. M.
MS—D. L. Reese, Taylorville, Ill.
S of H—Elec. loco.; track gauge 42 in.
S of M—20 Elec. mach.
PP—Power purchased.
New mine.

Nokomis No. 10 Mine; Shaft; No. 6 Seam, 96 in. thick.
PO—Nokomis, Ill.; SP—Same; CTY—Montgomery; RR—C. & E. I., Big Four.
MS—John Marland, Nokomis, Ill.
S of H—16 Elec. loco.; track gauge 42 in.
S of M—35 Elec. mach.
PP—2- 400 K. W., 1 flywheel set, 1 1500 H.P. hoist motor; 250 volts D.C., 2300 volts A.C., 3 phase, 60 cycles; power purchased from Central plant.
EMP—550. Last fiscal year output 125,00 tons.

Kortkamp No. 11 Mine; Shaft; No. 6 Seam, 90 in. thick.
PO—Hillsboro, Ill.; SP—Same; CTY—Montgomery; RR—C. & E. I., Big Four.
MS—Wm. Medill, Hillsboro, Ill.
S of H—10 Elec. loco.; track gauge 36 in.
PP—4 Return tubular boilers, total 1000 H.P., 2 gen. units 250 volts D.C., 1 motor gen. set, 1 pump; Power from Central plant.
EMP—550; Last fiscal year output 241,000 tons.

Witt Nos. 12 and 14 Mines; Shaft; No. 6 Seam, 82 and 84 in. thick.
PO—Witt, Ill.; SP—Same; CTY—Montgomery; RR—C. & E. I., Big Four.
MS—Ed. Bottomley, Witt, Ill.
S of H—12 Elec. loco.; track gauge 30 and 42 in.
PP—9 Return tubular boilers, total 1550 H.P., 1 motor gen. set, 250 volts D.C., one 300 K.W.; Power purchased.
EMP—625; Last fiscal year output 711,000 tons.

Taylor Springs No. 15 Mine; Shaft; No. 6 Seam, 96 in. thick.
PO—Taylor Springs, Ill.; SP—Same; CTY—Montgomery; RR—C. & E. I.
MS—R. W. Campbell, Hillsboro, Ill.
S of H—10 Elec. loco.; track gauge 48 in.
PP 4 Return tubular boilers, total 800 H.P., one 300 K.W. gen. set., 250 volts D.C.; Power purchased.
EMP—340; Last fiscal year output 453,000 tons.
Successors to the Kortkamp Coal Co., Montgomery County Coal Co., Illinois Midland Coal Co., Burnwell Coal Co.

PENWELL COAL MINING CO.

Penwell Mine, Shaft, No. 6 Seam, 10 to 6 ft. thick.
PO—Pana, Ill. SP—Same. CTY—Christian. RR—Ill. Cent. Ry.
PR—Geo. V. Penwell, 39 Adams St. Chicago, Ill.
TR—Warren Penwell, ... Pana, Ill.
GM—Warren Penwell, " "
PA—Warren Penwell, " "
GS—Geo. Rollo, " "
S of M—Mules and 3 elec. loco. Track gauge 42 in.
S of M—Hand.
PP—6 water tube boilers, 5 gen. units, 230 volts.
EMP—300. Annual output 280,000 tons.

PEORIA DISTRICT COLLIERY CO.

Sholl Bros., No. 3 Mine, Shaft, No. 5 Seam.
PO—Bartonville, Ill. SP—Acme, Ill. CTY—Peoria. RR—Peoria & Penna. Union.
GM—J. W. Deeny, ... Peoria, Ill.
PA—J. W. Deeny, " "
MS—W. W. Cruikshank, Bartonville, "
S of H—Elec. loco.
S of M—Elec. machines.
PP—3 boilers, total 200 H.P.
EMP—140.

PEOPLES COAL CO.

Lebanon Mine; Shaft; No. 7 Seam, 54 to 60 in. thick.
PO—Lebanon, Ill.; SP—Same; CTY—St. Clair; RR—B. & O., S. W.
PR—John Schmidt.....Lebanon, Ill.
TR—W. H. Chapple, " "
GM—W. H. Chapple, " "
PA—W. H. Chapple, " "
MS—D. Stoddard, " "
S of H—Mules.
S of M—6 Comp. air mach.
PP—1 Atlas return tubular boilers, total 200 H. P., 1 compressor, 1 pump.
EMP—35. Last fiscal year outpu, 36,000 tons.
Sales Agent, W. H. Chapple, Lebanon, Ill.
Successors to the Lebanon City Coal Co.

PITTSBURGH MINING CO.

Pittsburgh Mine, Shaft, First Seam, 6 ft. thick.
PO—Belleville, Ill.; SP—Same; CTY—St. Clair; RR—Southern.
PR—Louis Michaelis, ..Belleville, Ill.
MS—Louis Michaelis, " "
TR—Hugo Michaelis, " "
GM—John Hassler, " "
GS—L. Michaelis, " "
PA—L. Michaelis, " "
EM—Edward Michaelis, " "
S of H—Mules. Track gauge 24 in.
S of M—Hand.
PP—2 water tube boilers, total 200 H.P., 3 pumps.
EMP—35 to 42. Last fiscal year output 35,000 tons.

POCAHONTAS MINING CO.

General Office, Rialto Bldg., St. Louis, Mo.
Pocahontas Mine, Shaft, No. 6 Seam, 7 ft. thick.
PO—Pocahontas, Ill. SP—Same. CTY—Bond. RR—Vandalia.
PR—Aug. F. Klosing, St. Louis, Mo.
PA—O. G. Esslinger, Pocahontas, Ill.
CE—Frank Kalous.....Pocahontas, Ill.
MS—Chas. Starkey, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 pump, 3 water tube boilers, 1 Erie and 2 Wrangler, each 150 H. P.
EMP—210. Last fiscal year output 135,000 tons.
Sales agent, Rutledge & Taylor Coal Co., St. Louis, Mo.

POND CREEK COAL CO.

Franklin Mine, Shaft, No. 6 Seam, 9 ft. thick.
PO—Herrin, Ill.; SP—Same. CTY—Williamson. RR—I.C.
PR—Robert Dick, ... Herrin, Ill.
TR—Henry Bailey, " "
GS—Fred Dick, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—16 Puncher machines.
PP—2 air compressors, 2 pumps, 2 water tube and 2 return tubular boilers, total 1,050 H.P.
EMP—200. Last fiscal year output 150,000 tons.

PRAIRIE COAL CO.

General Office, Pierce Bldg., St. Louis, Mo.
Mine, Shaft, No. 6 Seam, 7 ft. thick.
PO—Belleville, Ill. CTY—St. Clair. RR St. Louis & O'Fallon Electric.
PR—Frank Aid, ... St. Louis, Mo.
TR—Frank Aid, " "
PA—Frank Aid, " "
MS—James Daniels, ...Belleville, Ill.
MM—John Siddall, " "
EE—Eli Siddall, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—3 boilers, Brownell, total 375 H. P., 1 pump.
EMP—335. Last fiscal year output
PP—3 Return tubular boilers, pump. 19,000 tons. Sales agent, Frank Aid, St. Louis, Mo.

PRYCE COAL CO.

Pryce Mine, Shaft, "First" Seam, 2½ to 5½ ft. thick.
PO—Coal Valley, Ill. SP—Same. CTY—Rock Island. RR—Rock Island.
PR—J. J. Pryce, ... Coal Valley, Ill.
TR—J. M. Pryce, " "
GM—J. M. Pryce, " "
PA—J. M. Pryce, " "
S of H—Mules. Track gauge 27 in.
S of M—Hand.
PP—3 Return tubular boilers, 1 pump.
EMP—40. Last fiscal year output 19,000 tons.

RANDOLPH COUNTY COAL MINING CO.

Shaft Mine, No. 6 Seam, 7 ft. thick.
PO—Coultersville, Ill. SP—Same. CTY—Randolph.
S of H—Mules.
S of M—Hand.
EMP—77. Last fiscal year output 39,391 tons. State report.

REEB COAL CO.

Murphy Mine, Shaft No. 8 Seam, 6 ft. thick.
PO—Belleville, Ill. SP—Belleville, Ill. CTY—St. Clair. RR—I.C., Belleville & Carondelet Branch.
PR—Joe Anton, ... Belleville Ill.
TR—Peter N. Reeb, " "
GM—Peter N. Reeb, " "
PA—Peter N. Reeb, " "
GS—James Murphy, " "
EM—Wm. Zeihnert, " "
S of H—Mules. Track gauge 22 in.
S of M—Hand.
PP—Buy elec. power. Motor hoist, 1 pump.
EMP—12. Last fiscal year output, 13,202 tons. Sales agents, Lenz Coal & Mining Co.

REND, W. P., COAL & COKE CO.

General Office, Chicago, Ill.
No. 2 Mine; Shaft; No. 6 Seam, 108 in. thick.
PO—Rendville, Ill.; SP—Herrin, Ill.; CTY—Williamson; RR—C. B. & Q., I. C.
GM—J. L. Ohle.....Rend, Ill.
PA—J. L. Ohle, " "
EM—R. L. Adams——..—Herrin, Ill.
SM—Guy Minton, " "
S of H—Elec. loco. and mules.
S of M—Elec. mach.
PP—8 boilers, total 1,200 H. P., 3 ger units, 250 volts D. C.
EMP—450. Last fiscal year output, 542,481 tons.

REND, W. P., COLLIERIES CO.

General Office, Chicago, Ill.
No. 1 Mine, Shaft, No. 6 Seam, 104 in. thick.
PO—Rend, Ill. SP—Sesser, Ill. CTY—Franklin. RR—C.B.&Q.
GM—J. L. Ohle, ... Rend, Ill.
PA—J. L. Ohle, " "
SM—R. E. Prigmore.....Rend, Ill.
EM—R. L. Adams, ... Herrin, "
S of H—Elec. loco. and mules.
S of M—Elec. machines.
PP—8 boilers, toal 1200 H. P., 2 gen. unit 250 volts D.C.
EMP—400. Last fiscal year output, 452,461 tons.

RITCHEY COAL CO.

PO—Pinckneyville, Ill.; SP—Same; CTY—Perry; RR—I. C.
PR—W. S. Wilson....Pinckneyville, Ill.
TR—S. S. Ritchey, " "
MS—W. T. Ritchey, " "
S of H—Mules.
S of M—Hand.
PP—4 Water tube boilers.
EMP—122. Last fiscal year output, 150,000 tons.

ROANOKE COAL CO.

Roanoke Mine, Shaft, No. 2 Seam, 2½ ft. thick.
PO—Roanoke, Ill. SP—Same. CTY—Woodford. RR—A.T.&S.F.
PR—James Duggan.....Roanoke, Ill.
GM—James Duggan, " "
PA—T. L. Duggan, " "
MS—Geo. DeWilde, " "
SCO—Roanoke Supply Co., Buyer, S. D. Spalding, Roanoke, Ill.
S of H—Mules.
S of M—Hand.
PP—5 boilers, total 400 H.P.
EMP—300. Last fiscal year output 140,000 tons.

ROYAL COLLIERY CO.

Royal Mine, Shaft, No. 6 Seam, 8 to 7½ ft. thick.
PO—Virden, Ill. SP—Same. CTY—Macoupin. RR—C.B.&Q., C.&A., C. &N.W.
PR—D. B. Wentz....Philadelphia, Pa.
TR—H.B. Price, " "
VP—A.J. Maloney, ... Virden, Ill.
EM—R.A. Wolfe, ... " "
MS—P. Hogan, " "
S of H—3 elec. loco. Track gauge 42 in.
S of M—14 elec. machines.
PP—1 pump, 7 Kewanee return tubular boilers, total 1050 H. P., 1 gen. unit, 250 volts D.C.
EMP—450. Annual output, 500,000 tons. Sales agent, A.J. Maloney, Virden, Ill.

RUTLAND COAL CO.

General Office, Oglesby, Ill.
Rutland No. 2 Mine; Shaft; No. 2 Seam, 32 to 38 in. thick.
PO—Rutland, Ill.; SP—Same; CTY—LaSalle; RR—I. C.
PR—E. T. Bent, Fischer Bldg., Chicago, Ill.
GM—E. T. Bent, Fischer Bldg., Chicago, Ill.
TR—H. A. Bent.....Oglesby, Ill.
GS—J. R. Bent, " "
MS—J. R. Bent, " "
S of H—Mules.
S of M—Hand.
PP—2 Erie, return tubular boilers, total 150 H.P., 1 pump.
EMP—105. Last fiscal year output 29,450 tons.
Sales Agency, Oglesby Coal Co., Oglesby, Ill.

ST. LOUIS-CARTERVILLE COAL CO.

Dale Mine; Shaft; No. 6 Seam, 72 to 132 in. thick.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—I. M. & S.
PR—H. Dale.....Herrin, Ill.
TR—O. H. McNeill, " "
GM—O. H. McNeill, " "
GS—O. H. McNeill, " "
PA—O. H. McNeill, " "
EM—R. L. Adams, " "
MM—John Kenner, " "
S of H—1 Gasoline loco. and mules; track gauge, 36 in.
S of M—Hand.
PP—3 Return tubular boilers.
EMP—200.

ST. LOUIS-COULTERVILLE COAL CO.

Shaft Mine, No. 6 Seam, 7 ft. thick.
PO—Coultersville, Ill. SP—Same. CTY Perry.
S of H—Mules.
S of M—Elec. mach. and hand.
EMP—71. Last fiscal year output 37,192 tons. State report.

ST. LOUIS & O'FALLON COAL CO.

Nos. 1 and 2 Mines, Shaft, Belleville No. 6 Seam, 6½ to 7½ ft. thick.
PO—East St. Louis, Ill. SP—Same. CTY—St. Clair. RR—St. Louis & O'Fallon.
PR—T. M. Jenkins, South Side Bank Bldg., St. Louis, Mo.
TR—Geo. E. Kauffman, South Side Bank Bldg., St. Louis, Mo.
MS—M. Saugrelet.....Collinsville, Ill.
EM—W. C. Wolf, Belleville, "
S of M—42 comp. air and 15 elec.
S of H—Mules and 5 elec. loco. machines.
PP—9 return tubular boilers, total, 1,800 H.P., 2 gen. units, 1 pump.
EMP—800. Last fiscal year output 800,000 tons.
Sales Agent, W. C. Jenkins, South Side Bank Bldg., St. Louis, Mo.

ST. PAUL COAL CO.

General Office, Ottawa, Ill.
PR—Jas. Needham, ... Ottawa, Ill.
TR—C.L. Connolly, ... Cherry, Ill.
GM—Jas. Needham, ... Ottawa, "
GS—Jas. Needham, " "
EM—C. F. Brenn, " "
PA—J. T. Hocker.....Chicago, "
MM—Barney Gately, Granville, "
John Chedister, .. Cherry, "

Granville No. 1, Shaft, Third vein No. 5, 42 in. thick.
PO—Granville, Ill. SP—Same. CTY—Putnam. RR—C.M.&St. P.
MS—Jas. Steele, ... Granville, Ill.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—6 return tubular boilers total 900 H.P., 1 gen. unit, 12½ K.W., D.C., 1 pump.
EMP—790. Last fiscal year output 387,372 tons.

Cherry Mine, No. 2, Shaft, Third vein No. 5, 46 in. thick
PO Cherry, Ill. SP Same CTY—Bureau. RR—C.M.&St. P.Ry.
MS—Jas. Steele, ... Granville, Ill.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—6 Return tubular boilers, total 900 H.P. gen. unit, 12½ K.W.
EMP—543. Last fiscal year output 324,416 tons.

SALINE COUNTY COAL CO.

See Big Creek Colliery Co.

SANGAMON COAL CO.

Sangamon Mine, Shaft, No. 5 Seam, 6 ft. thick.
PO—Springfield, Ill.. SP—Same. CTY—Sangamon; RR—Ill. Cent., C. & A.
PR—H. K. Weber.....Springfield, Ill.
TR—E. H. Buckley, " "
GM—E. H. Buckley, " "
PA—E. H. Buckley, " "
GS—John Vose, " "
S of H—Mules; track gauge 35 in.
S of M—Hand.
PP—1 pump, 5 return tubular boilers, total 250 H. P.
EMP—300. Last fiscal year output 180,000 tons.
Sales Agent, E. H. Buckley, Springfield, Ill.

SCRANTON & BIG MUDDY COAL MINING CO.

Scranton Mine, Shaft, No. 6 Seam, 8 to 6 ft. thick.
PO Marion, SP—Same, CTY—Williamson; RR—St. Louis, Iron Mountain.

Continued on Next Page.

PR—Wm. R. Lewis.....Scranton, Pa.
TR—W. C. Cowles, " "
GM—R. C. Hill.....Marion, Ill.
GS—R. C. Hill, " "
PA—R. C. Hill, " "
S of H—Mules; track gauge 36 in.
S of M—18 Comp. air mach.
PP—2 air comp., 2 pumps, 4 return tubular boilers, total 600 H. P.
EMP—200. Last fiscal year output 158,475 tons.
Sales Agent, DeVoy & Kuhn Coal & Coke Co., St. Louis, Mo.

SCHMIDGALL COAL CO.
Out of business.

SECURITY COAL & MINING CO., OF MISSOURI.
General Office, Security Bldg., St. Louis, Mo.
Security Mine, Shaft, No. 6 Seam, 72 in. thick.
PO—Duquoin, Ill.; SP—Same; CTY—Perry.
PR—J. E. Rutledge, St. Louis, Mo.
PA—W. A. Lafont, " " "
MS—J. B. Burkhardt, ..Duquoin, Ill.
EM—John Gibson, " "
S of H—6 Elec. loco. and mules; track gauge 36 in.
S of M—9 Elec. mach.
PP—6 Return tubular boilers, total 1,200 H.P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—470. Last fiscal year output 553,545 tons.
Sales Agency, Rutledge & Taylor Coal Co., St. Louis, Mo.

SENIOR, L., COAL CO.
See Victoria Coal Co.

SESSER COAL COMPANY.
General Office, 1575 Old Colony Bldg., Chicago, Ill.
Mine No. 1, Shaft; No. 6 Seam; 7 to 13 ft. thick; operate washery.
PO—Sesser, Ill.; SP—Same; CTY—Franklin; RR—C. B. & Q.
PR—T. C. Keller.....Chicago, Ill.
TR—A. B. Steffens, " "
GM—D. P. Jackson.....Sesser, Ill.
MS—E. H. Hebestreit, ..Sesser, Ill.
PA—J. F. Norton.....Chicago, Ill.
SM—J. F. Norton, " "
EM—R. L. Adams.....Herrin, Ill.
MM—Lon. Bateman.....Sesser, Ill.
EE—G. A. Schreier, " "
S of H—6 Elec. loco.; track gauge 42 in.
S of M—5 Comp. air and 35 elec. mach.
PP—9 Gem, Nagle, Ames, Atlas, return tubular boilers total 1350 H. P., 2 gen. units, 250 volts, D C.; 2 air comp.
EMP—500 Last fiscal year output 570,000 tons. Coke ovens, 2 Bee Hive.
Sales Agent, T. C. Keller & Co., Chicago, Ill.

SHARON COAL & BRICK CO.
Sharon Mine; Shaft No. 6 Seam; 60 to 72 in. thick.
PO—Georgetown, Ill.; SP—Same; CTY—Vermillion; RR—Illinois Traction System.
PR—H. W. Morris....Georgetown, Ill.
TR—D. H. Bowey, " "
GM—Frank P. Morris, " "
GS—Frank P. Morris, " "
PA—Frank P. Morris, " "
MS—Jas. O'Biant, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 Fire Tube Boilers (Atlas), total 240 H. P., 1 pump.
EMP—61. Last fiscal year output 31,402 tons.

SHOAL CREEK COAL CO.
General Office, Chicago, Ill.
Shoal Creek No. 1, Shaft; No. 6 Seam; 6 ft. to 7½ ft. thick; operate washery.
PO—Panama, Ill.; SP—Same; CTY—Montgomery; RR—T. St. L. & N.
PR—Frank P. Blair....Chicago, Ill.
TR—C. Robt. Solsberg, " "
PA—C. Robt. Solsberg, " "
MS—F. F. Grabruck....Panama, Ill.
EM—Wm. Baird, " "
MM—Henry Jonke, " "
SM—R. L. Darby, " "
S of H—Mules and 6 Elec. loco.; track gauge 38 in.
S of M—21 Elec. mach.
PP—Return tubular boilers total 2500 H. P., 2 gen. units, 250 volts, D. C., 1 pump. Purchase power.
EMP—400 Last fiscal year output 390,000 tons.

SILVER CREEK COLLIERY CO.
Silver Creek Mine, Shaft, No. 5 Seam, 50 to 54 in. thick.
PO—Farmington Ill., SP—Same, CTY—Fulton; RR—M & St. L., Peoria Line and C. B. & Q., Beardstown Line.
PR—G. W. Gale.....Galesburg, Ill.
TR—H. W. Stewart....Monmouth, Ill.
PA—H. W Stewart, " "
GM—W. W. McCullough, " "
GS—Ira Long.....Farmington, Ill.
EE—Ira Long, " "
MM—Lew Krisher, " "
EM—Ralph Furguson....Monmouth, Ill.
S of H—Mules, track gauge 38 in.
S of M—Hand.
PP—2 Return tubular boilers, Frost Murray, total 300 H. P., 2 gen. units, 220 volts D. C.
EMP—220. Annual output, 200,000 tons.
Sales Agent, H. W. Stewart, Monmouth, Ill.

SIMMONS COAL CO.
Simmon Mine; Shaft, No. 5 Seam, 4 ft. 10 in. thick.
PO—Canton, Ill.; SP—Same; CTY—Fulton.
S of H—Mules.
S of M—Hand.
EMP—162. Last fiscal year output 126,463 tons.
State report.

SMITH-LOHR COAL MINING CO.
Springside Mine, Shaft, No. 6 Seam, 7½ to 10 ft. thick; operate washery.
PO—Pana, Ill.; SP—Same; CTY—Christian; RR—I. C., C. & E. I., Big Four, B. & O., Southwest.
PR—B. Beckenheimer.....Pana, Ill.
TR—B. Beckenheimer, " "
GM—B. Beckenheimer, " "
GS—R. G. Lohr, " "
S of H—Mules, and 2 elec. loco. Track gauge 28 in.
S of M—Hand.
PP—5 Return tubular boilers, total 600 H. P.
EMP—275. Annual output, 160,000 tons.

SOPER MINING CO.
Barnard Mine; Shaft; No. 6 Seam, 72 in. thick.
PO—Cutler, Ill.; SP—Same; CTY—Perry; RR—Wab., Chester & Western.
PR—A. Soper, ...Cutler, Ill.
MS—Clarence Montuth, " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, 70 H.P., 1 pump.
EMP—40.
Successors to the Soper-White Mining Co. and the King City Coal Mining Co.

SOPER-WHITE MINING CO.
PO—Cutler, Ill.; CTY— Perry.
No report.

SOUTHERN COAL, COKE & MINING CO.
General Office, St. Louis, Mo.
PR—W. K. Kavanaugh..St. Louis, Mo.
GM—W. K. Kavanaugh, " "
TR—J. Y. Lockwood, " "
PA—J. Y. Lockwood, " "
GS—F. S. Pfahler....Belleville, Ill.
EM—W. F. Davis, " "
MM—J. W. Novotny, " "
EE—J. W. Novotny, " "
Sales Manager, R. E. Eggerbrecht.

Muren, Germantown, Avery, Oakland. Oakhill and Glendale Mines, Shafts. No. 6 Seam; 72 to 96 in. thick.
PO—Belleville, Ill., SP— Same, CTY—St. Clair; RR—Southern R. R.
MS—Fred Grannilich and Al Severit.
S of H—Mules; track gauges: Avery 21 in., Oakland and Oakhill 22 in., Muren 24 in. and Germantown 21 in.
S of M—Oakland, Glendale and Muren hand; Avery, Oakhill, Germantown, machs.; 4 machs. at Germantown and 6 at Avery and Oakhill.
PP—10 Return tubular boilers.
Litle Oak Mine, Shaft; No. 6 Seam; 72 to 144 in. thick.
PO—Belleville, Ill., SP— Same, CTY—St. Clair; RR—Southern R. R., Main Line.
MS—Steve Herbert.....Belleville, Ill
S of H—Mules and 1 gasoline loco. Track gauge 36 in
S of M—24 comp., air mach.
PP—5 Return tubular boilers, O'Brien make, total H. P. 500, 1 air comp. 1 pump.
EMP—240. Last fiscal year output, 178,999 tons.

Shiloh Mine. Shaft. No. 6 Seam. 6 to 8 ft. thick; operate washery.
PO—Belleville, Ill., SP—Shiloh Sta., Ill., CTY—St. Clair; RR—Southern R. R., Main Line.
MS—F. J. Boettcher...Belleville, Ill.
S of H—3 Gasoline motors; track gauge 42 in.
S of M—11 Elec. mach.
PP—6 Return tubular boilers, total 700 H. P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—380. Last fiscal year output, 290,551 tons.

New Baden Mine, Shaft, No. 6 Seam, 6½ to 10 ft. thick.
PO—New Baden, Ill., SP—Same, CTY—Clinton; RR—Southern R. R.; Main Line.
MS—Wm. Phillips....New Baden, Ill.
S of H—6 Elec. loco., track gauge 36 in.
S of M—8 Elec. and 30 Comp air machs.
PP—4 O'Brien Water tube boilers, total, 1200 H. P., 1 gen. unit, 250 volts D. C., 2 air comp. and 3 pumps.
EMP—450. Last fiscal year output 442,844 tons.

Glendale Mine; Shaft; No. 6 Seam; 60 to 96 in. thick.
PO—Belleville, Ill.; SP—Same; CTY—St. Clair; RR—Southern, Main Line;
MS—Pete Noll.....Belleville, Ill
S of H—Mules; track gauge, 22 in.
PP—2 Return tubular boilers, and 1 pump.
EMP—14. Last fiscal year output, 5,664 tons.

SOUTHERN ILLINOIS COAL & COKE CO.
See Taylor Mining Co.

SOUTH MOUNTAIN COAL CO.
South Mountain Mine, Slope; No. 5 Seam; 6 ft. thick.
PO—Petersburg, Ill.; SP—Same, CTY—Menard, RR—C. P. & St. L.
PR—Jos. Amberber.....Petersburg, Ill
GM—Jos. Amberger, " "
PA—Jos. Amberger, " "
GS—Jos. Amberger, " "
TR—C. A. Amberger, " "
S of H—Mules, track gauge 38 in.
S of M—Hand.
PP—2 Water tube boilers, total 150 H. P., and 1 pump.
EMP—43. Last fiscal year output, 39,000 tons.
Sales Agent, North Western Coal Co., Chicago, Ill.

SPAULDING COAL CO.
Out of business.

SPICER COAL CO.
Out of business.

SPOON RIVER COAL CO.
Ellisville Mine, Shaft; "Ellisville No. 1" Seam; 3½ to 6 ft. thick.
PO—London Mills, Ill.; SP—Ellisville, Ill.; CTY—Fulton; RR—C.B.& Q
Willard A. Schaeffer, Receiver, Rock Island, Ill.
MS—J. H. Morris.....Galesburg Ill.
S of H—Gasoline locos.
S of M—Hand.
PP—2 Return tubular boilers; 4 pumps.
EMP—120. Last fiscal year output, 75,000 tons.

SPRING CREEK COAL CO.
Spring Creek Mine, Shaft.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—B. & O. S. W.; C & A. and C. & N. W.
PR—Geo. Reisch, Sr...Springfield, Ill.
TR—Geo. Reisch, Jr., " "
GM—W. J. Walsh, " "
PA—W. J. Walsh, " "
MS—Sam Simpkins, " "
SM—H. F. Neuman, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—Boilers total 350 H. P.
EMP—150. Last fiscal year output 100,000 tons.

SPRING VALLEY COAL CO.
General Office, Chicago, Ill.
PR—M. H. Taylor.....Erie, Pa.
GM—S. M. Dalzell.....Chicago, Ill.
GM—Acting, L. H. Smith..Spring Valley, Ill.
TR—Geo. A. Wheeler, " "
PA—Geo. A. Wheeler..Spring Valley, Ill.
MS—R. M. Hill, " "
EM—N. H. Cole, " "
MM—A. H. Halladay, " "
SCO—Seatonville Supply Co., Buyer, P. Y. Koyak.
Sales Agent, S. M. Dalzell, Chicago, Ill.

Nos. 1 and 3; Shaft; Seam, 3½ ft. thick; operate washery.
PO—Spring Valley, Ill.; SP—Same; CTY—Bureau; RR—C. R. I. & P., C. N. & W.
S of H—Mules; track gauge 41 in.
S of M—Hand.
PP—Erie boilers, total 900 H. P., 1 pump.

No. 4 Mine; Shaft; Seam; 3½ ft. thick.
PO—Seatonvile, Ill.; SP—Same; CTY—Bureau; RR—C. & N. W.
S of H—Mules; track gauge 41 in.
S of M—Hand.
PP—Murray & Erie boilers, total 900 H. P., 1 gen. D. C., 1 pump.

No. 5 Mine: Shaft; Seam; 3½ ft. thick; washery.
PO—Dalzell, Ill.; SP—Same; CTY—Bureau; RR—C. & N. W.
S of H—2 Gasoline loco. and mules; track gauge 41 in.
S of M—Hand.
PP—Erie boilers, total 900 H. P., 1 pump.

SPRINGFIELD COAL MINING CO.
General Office, Springfield, Ill.
Nos. 1, 2, 3, 4, 5 and 6 Mines; Shafts.
PO—(1 2) Riverton, Ill., (3 4 5) Springfield, Ill., (6) Taylorville, Ill.; RR—Wab., C. & A., B. & O.
F. S Peabody, Receiver, Chicago, Ill.
No report.

SPRINGFIELD CO-OPERATIVE COAL CO.
Shaft Mine; No. 5 Seam, 5 ft. 10 in. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—C. & A.
S of H—Mules and Elec. loco.
S of M—Hand.
PP—3 Boilers total 500 H. P.
EMP—158 Last fiscal year output 115,300 tons.

STANDARD COLLIERIES COAL COMPANY.
(E. C. Searls, Receiver.)
McClintock Mine, Shaft; No. 6 Seam; 7 to 10 ft. thick.
PO—Johnston City, Ill.; SP—Same; CTY—Williamson; RR—I. M. & S.
MS—T. S. Cousins.
S of H—Mules; track gauge 42 in
S of M—17 Electric machines.

STAR COAL CO.
Star Mine; No. 6 Seam; 72 to 108 in. thick.
PO—Freeburg, Ill.; SP—Same; CTY—St. Clair; RR—I. C., Cairo Short Line.
PR—P. J. Vogel.....Freeburg, Ill.
TR—C. G. Zacher, " "
S of H—Mules.
S of M—9 Comp. air mach and hand.
PP—2 Return tubular boilers, total 300 H. P., 1 comp., 1 pump and 1 injector.
EMP—85. Last fiscal year output, 100,000 tons.
Sales Agency, Kolb Coal Co.

STAR COAL CO. OF GALESBURG.
General Office, Galesburg, Ill.
PR—Thomas Fairbairn...Streator, Ill.
TR—R. J. Fairbairn....Galesburg, Ill
PA—R. J. Fairbairn, " "
GM—W. R. Hawkins, " "
GS—J. J. Wood.....Cuba, Ill.
Sales Agent, W. R. Hawkins, Galesburg, Ill.

Fiatt No. 1, Shaft, No. 5 Seam, 5 ft. 2 in. thick.
PO—Fiatt, Ill.; SP—Same, CTY—Fulton; RR—C. B. & Q., Havana Branch.
MS—Wm. Donlaldson.....Fiatt, Ill.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 250 H. P.
EMP—40. Annual output 21,433 tons.

Star No. 2, Slope, No. 5 Seam, 5 ft. 4in. to 4½ ft. thick.
PO—Cuba, Ill., SP—Same, CTY—Fulton; RR—C. B. & Q., Havana Branch.
MS—John Davis.....Cuba, Ill.
S of H—Rope and mule; track gauge 36 in.
S of M—Hand.
PP—2 Frost 18x72 boilers, total 250 H. P.
EMP—110. Annual output 78,227 tons.

No. 3 Mine, Shaft, No. 5 Seam, 5 ft. 4 in. to 4 ft. 8 in. thick.
PO—Cuba, Ill., SP—Same, CTY—Fulton; RR—C. B. & Q., Havana Branch.
MS—E. P. Evans.....Cuba, Ill.
S of H—Rope and mules; track gauge, 36 in.
S of M—Hand.
PP—2 Frost 72x18 boilers, total 250 H. P.
EMP—194. Last fiscal year output. 175,000 tons.

STONINGTON COAL CO.
Shaft; No. 6 Seam; 8 ft. thick.
PO—Taylorville, Ill.; SP—Stonington, Ill.; CTY—Christian; RR—Wab.
PR—D. W. Johnston .. Taylorville, Ill.
TR—Roy A. Johnston, " "
GM—W. S. Ridgly, " "
MS—W. S. Ridgly, " "
PA—F. F. Banchman, " "
S of H—Mules and 4 elec. loco.; track gauge 42 in.
S of M—7 Elec mach.
PP—6 Water tube boilers, total 900 H. P., 2 gen. units, 250 volts, D. C. 1 pump
EMP—295. Last fiscal year output 228,176 tons.
Sales Agent, W. S. Ridgly.

STREATOR CLAY MFG. CO., THE
Drift; No. 7 Seam; 33 in. to 40 in. thick.

Continued on Next Page.

STREATOR CLAY MFG. CO. (THE)—CON.
PO—Streator, Ill.; SP—Same; CTY—La Salle; RR—Wab. & C. I. & S.
PR—R. H. Green.....Streator, Ill.
TR—R. H. Green, " "
GM—R. H. Green, " "
MS—John Reynolds, " "
PA—Geo. E. Connolly, "
S of H—Mules; Track gauge 34 in.
S of M—1 comp. air mach.
PP—Boilers total 750 H. P., Frost, 1 gen. unit, A. C., 3 phase, 60 cycles; 1 air comp.; 2 pumps.
EMP—45.

SUBURBAN COAL & MINING COMPANY.
Suberban Mine, Shaft; No. 6 Seam; 7 ft. thick.
PO—Belleville, Ill.; SP—Signal Hill, Ill.; CTY—St. Clair; RR—St. L. & B. E. Ry.
PR—Gustave Boehmer....Belleville, Ill.
GM—John Guest.....Belleville, Ill.
MS—John Guest, " "
EM—Walter Goalby, " "
MM—Walter Goalby, " "
S of H—Mules and 1 gasoline loco.; track gauge 22 in.
S of M—Hand.
PP—1 Cylinder, 1 Return tubular boiler, 1 pump.
EMP—140. Last fiscal year output, 144,250 tons.
Sales Agent, Bochmer Coal Co., St. Louis, Mo.

SUMMIT MINING CO.
Summit Mine; Shaft; Second Seam, ft. thick.
PO—Belleville, Ill.; SP—Summit Mine Switch, Ill.; CTY—St. Clair
PR—Wm. Fournir.....Belleville, Ill.
GM—Wm. Fournir,
TR—Wm. Lanxon, " "
EM—G. Meug, " "
MS—Wm. Erwin, " "
S of H—Mules; track gauge 24 in.
S of M—Hand.
PP—2 Return tubular boilers, total 110 H. P., 1 gen. unit, 1 pump.
EMP—85. Last fiscal year output 36,558 tons.
Sales Agent, B. Avery, St. Louis, Mo.

SUNNYSIDE COAL COMPANY.
General Office, Chicago, Ill.
Sunnyside Mine, Shaft; No. 7 Seam; 7 to 12 ft. thick; operate washery.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—C. B. Q., and I. C.
PR—T. G. Warden.....Chicago, Ill.
MS—John Rollo.....Herrin, Ill.
S of H—Mules and 3 elec. loco.; track gauge 42 in.
S of M—Comp. air mach.
PP—8 Water tube boilers; 2 air comp.
EMP—450.
Sales Agent, J. J. Riggs, Chicago, Ill.

SUPERIOR COAL CO.
General Office, Gillespie, Ill.
PR—W. A. Gardner.....Chicago, Ill.
TR—A. B. Jones, " "
PA—L. S. Carroll, " "
GM—John P. Reese.....Gillespie, Ill.
GS—John H. Ross, " "
CE—P. F. Jorgenson, " "
MM—Roy Kentfield, " "
EE—H. L. Leekamp, " "

No. 1 Mine; Shaft; No. 6 Ill., Seam, 7 to 8 ft. thick; operate washery.
PO—Gillespie, Ill.; SP—Benld, Ill.; CTY—Macoupin; RR—C. & N. W.
MS—Nat Farnsworth....Gillespie, Ill.
S of H—5 Elec. loco. and mules; track gauge 42 in.
S of M—3 Elec., 47 comp. air mach.
PP—12 Return tubular boilers total 1500 H. P., 1 gen. unit 250 volts D. C., 2 comp., 1 pump.
EMP—659. Last fiscal year output 754,992 tons.

No. 2 Mine; Shaft; No. 6 Ill. Seam, 7 to 8 ft. thick; operate washery.
PO—Sawyerville, Ill.; SP—Benld, Ill; CTY—Macoupin; RR—C. & N. W.
MS—Tom Ferguson....Sawyerville, Ill.
S of H—5 Elec. loco. and mules; track gauge 42 in.
S of M—2 Elec., 50 comp. air mach.
PP—12 Return tubular boilers total 1500 H. P., gen. unit 250 volts D. C., 2 comp. and 1 pump
EMP—665. Last fiscal year output 887,863 tons.

No. 3 Mine; Shaft; No. 6 Ill. Seam, 4 ft. 9 in. to 6 ft. thick; operate washery.
PO—Gillespie, Ill.; SP—Benld, Ill.; CTY—Macoupin; RR—C. & N. W.
MS—John Day.....Gillespie, Ill.
S of H—5 Elec. loco. and mules; track gauge 42 in.
S of M—Elec. mach.
PP—8 Return tubular boilers, total 1200 H. P., 2 gen. unit 250 volts D. C., 1 pump.
EMP—675. Last fiscal year output 891,457 tons.

TAYLOR COAL CO.
General Office, Chicago, Ill.
Nos. 1 and 2, Possum Ridge, Walnut Ridge Mines; Shafts No. 6 Seam, 96 to 122 in. thick; Operate Washery.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—C. B. & Q., I. C. & M. P.
PR—H. H. Taylor.....Chicago, Ill.
TR—E. H. Keeler, " "
PA—P. H. Carroll.....Herrin, "
MM—G. L. Saylor, " "
S of H—4 Elec. and 2 gasoline loco.; track gauges, 36 and 42 in.
S of M—20 Comp air mach.
PP—14 Return tubular boilers, 2 air comp.
EMP—1,100. Last fiscal year output, 700,000 tons. Sales manager, H. H. Taylor, Chicago, Ill.

TAYLOR, JOSEPH, COAL CO.
General Office, O'Fallon, Ill.
PR—Joseph Taylor.....O'Fallon, Ill.
TR—Joseph Taylor, " "
GM—Joseph Taylor.....O'Fallon, Ill.
GS—Joseph Taylor, " "
PA—Wm. Reidelberger, Jr., " "
SCO—Joseph Taylor Merc. Co., Buyer Jos. Taylor, O'Fallon, Ill.

Taylor Mine; Shaft; No. 6 Seam, 7 to 10 ft. thick.
PO—O'Fallon, Ill.; SP—Same; CTY—St. Clair; RR— B. & O.
S of H—1 Gasoline loco. and mules; track gauge 24 in.
S of M—Hand.
EMP—200. Last fiscal year output, 77,921.37 tons.
Closed at present, March 1st, 1914.

Ridge Pairie; Shaft; No. 6 Seam; 7 to 10 ft. thick.
PO—O'Fallon, Ill.; SP—Same; CTY—St. Clair; RR— B. & O.
MS—Anton Jakonbek.....O'Fallon, Ill.
S of H—1 Elec. loco. and mules; track gauge 30 in.
S of M—Hand.
PP—Power purchased.
EMP—200. Last fiscal year output, 139,619.68 tons.

St. Ellen Mine; Shaft; No. 6 Seam; 7 to 10 ft. thick.
PO—O'Fallon, Ill.; SP—East St. Louis, Ill., CTY—St. Clair.
S of H—1 Elec. loco. and mules.
S of M—Hand.
PP—Power purchased.
EMP—300. Last fiscal year output 120,538.96 tons.

TAYLOR MINING CO.
General Office, Old Colony Bldg., Chicago, Ill.
PR—P. H. Carroll.....Herrin, Ill.
PA—P. H. Carroll, " "
EM—Roy Adams, " "
MM—G. L. Saylor, " "
EE—G. L. Saylor, " "
TR—John S. Reiner.....Chicago, Ill.
Sales Agent, H. H. Taylor.

Possum Ridge Mine; Shaft; No. 6 Seam; 96 to 121 in. thick.
PO—Herrin, Ill.; SP Same; CTY—Williamson; RR—C. B. & Q.
MS—Thomas Paul.....Herron, Ill.
S of H—2 Gasoline loco. Track gauge 44 in.
S of M—20 Comp. air mach.
PP—3 Return tubular boiler, total 450 H. P.

Walnut Ridge Mine; Shaft; No. 6 Seam; 96 to 121 in. thick.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—Mo. Pac., I. C.
MS—John Jeffrey.....Herrin, Ill.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 300 H. P.
EMP—(At both mines) 200. Last fiscal year output (for both mines), 200,000 tons.

TAZEWELL COAL CO.
Tazewell Mine; Shaft; No. 5 Seam, 4 ft. 8 in. thick.
PO—Pekin, Ill.; SP—Same; CTY—Tazewell; RR—Big Four, Santa Fe.
GM—Jas. Duggan.....Pekin, Ill.
PA—Jas. Duggan, " "
EM—M. L. Stewart, " "
S of H—Mules.
S of M—Elec. mach.
PP—3 Boilers, 1 gen. unit 250 volts D. C.
EMP—200.

TIRRE COAL & MNG. CO.
General Office, St. Louis, Mo.
Lenzburg Mine, Shaft; No. 6 Seam, 6 to 7½ ft. thick.
PO—Lenzburg, Ill.; SP—Same; CTY—St. Clair; RR—Ill. Cent.
PR—Wm. E. Tirre....St. Louis, Mo.
TR—Frank F. Tirre, " "
GM—Frank F. Tirre, " "
PA—Wm. F. Zager.....Lenzburg, Ill.
MS—Wm. F. Zager, " "
S of H—Elec. loco.; track gauge 2 ft.
S of M—Hand.
PP—2 Water tube boilers, total 140 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—56.

TILTON COAL CO.
Out of business.

TOLUCA COAL CO., (THE)
General Office, Wichita, Kans.
No. 1 Mine, Shaft, 2nd vein, 2 ft. 9 in. to 3 ft. 2 in. thick
PO—Toluca, Ill., SP—Same, CTY—Marshall; RR—A. T. & S. F. Ry. Main Line, C. & A. Peoria Br.
PR—G. T. Walker.....Wichita, Kans.
TR—G. T. Walker, " "
VP—C. P. A. Clough, " "
Secy—J. A. Parkinson, " "
GM—Geo. B. Gallon.....Toluca, Ill.
GS—Geo. B. Gallon, " "
PA—Geo. B. Gallon, " "
EM—G. L. Humphreys, " "
EE—C. E. Arnold, " "
S of H—Mules and 5 elec. loco., track gauge 36 in.
S of M—Hand.
PP—1 pump, 11 return tubular boilers, total 1175 H. P., 1 gen. unit 250 volts, D. C.
EMP—592. Annual output 289,561 tons.
Sales Agent, Geo. B. Gallon, Toluca, Ill.

TOWER HILL COAL CO.
Shaft, No. 6 Seam, 8 ft. thick; operate washery.
PO—Tower Hill, Ill.; CTY—Shelby; RR—C. C. C. & St. L., B. & O.
PR—C. H. Bradford..Sioux City, Iowa.
GM—T. Gascoigne, Fisher Bldg., Chi., Ill
PA—H. W. Potter, " "
MS—B. A. Goodwin....Tower Hill, Ill.
SM—B. A. Goodman, " "
MM—P. J. Dooner, " "
S of M—Hand.
PP—5 Return tubular boilers.

TUXHORN COAL COMPANY.
Tuxhorn Mine, Shaft, No. 5 Seam, 6 ft. to 5 ft. 3 in. thick.
PO—Springfield, Ill.; SP—Keys, Ill., CTY—Sangamon; RR—C. H. & D.
PR—James W. Jefferson..Springfield, Ill.
TR—Ray T. Jefferson, " "
GS—Clyde Atkinson, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand.
PP—1 pump, 2 return tubular boilers, total 200 H. P., gen. units 275 volts A. C., 3 phases, 60 cycles. Power purchased.
EMP—260.

UBBEN COAL CO.
Ubben Mine, Shaft, No. 5 Seam, 4 ft. 6 in. to 5 ft. thick.
PO—Pekin, Ill., SP—Same, CTY—Tazewell; RR—C. C. C. & St. L.
PR—U. A. Ubben.....Pekin, Ill.
TR—Theo. H. Ubben, " "
GM—U. A. Ubben, " "
GS—U. A. Ubben " "
PA—Theo. Ubben, " "
SB—U. A. Ubben, " "
MS—Henry Boetler, " "
S of H—Mules; track gauge 33 in.
S of M—Hand and 1 Elec. mach.
PP—1 pump, 1 return tubular boiler, total 100 H. P., also purchase power.
EMP—50. Last fiscal year output, 35,000 tons.
Sales Agent, Theo. H. Ubben, Pekin, Ill.

UNITED COAL MNG. CO.
Mines Nos. 1 and 2, Shafts; No. 6 Seam.
PO—Christopher, Ill.; SP—Same and Buckner, Ill.; CTY—Franklin; RR—I. C., and C. B. & Q.
PR—C. M. Moderwell, McCormick Bldg., Chicago, Ill.
TR—Lucius Teeter, Chicago Savings B., Chicago, Ill.
GM—F. J. Urbain....Christopher, Ill.
MS—Edw. Allais, " "
PA—J. B. Hilton, McCormick Bldg., Chicago, Ill.
CE—J. R. Gibson.....Du Quoin, Ill.
EM—J. B. Gibson, " "
MM—B. F. Lyday.....Christopher, Ill.
EE—James Lindsay " "
SCO—Christopher Store Co.." "
S of H—Mules and 26 elec. loco.
S of M—46 Elec. mach.
PP—11 Water tube boilers; 1 pump.
EMP—1125. Last fiscal year output 1,057,971 tons.
Sales Agent C. M. Moderwell & Co., Chicago, Ill.

VANDEVER, C. W.,
See Greenwood Coal Co.

VICTORIA COAL CO.
Victoria Mine; Shaft; No. 6 Seam, 72 to 90 in. thick.
PO—Belleville, Ill.; SP—Same; CTY—St. Clair; RR—Ill. Cent.
PR—John Henderson.....St. Louis, Mo.
TR—L. Senior.....Belleville, Ill.
GM—L. Senior, " "
GS—L. Senior, " "
MS—W. N. Barton, " "
EE—Chas. Davis, " "
S of H—Gasoline loco.; track gauge, 36 in.
S of M—6 Comp. air mach.
PP—3 boilers, total 300 H. P., and 2 pumps.
EMP—50. Last fiscal year output, 66,762 tons. Sales manager, John Henderson, St. Louis, Mo.

VIVIAN COLLIERIES CO.
See Middle States Coal Corp.

VULCAN COAL MINING CO.
Hippard Mine; Shaft; No. 6 Seam, 6½ ft. thick.
PO—Belleville, Ill.; SP—Same; CTY—St. Clair.
S of H—Elec. loco.
S of M—Hand.
EMP—16. Last fiscal year output 18,259 tons.
State report.

WABASH COAL CO.
General Office, Quincy, Ill.
PR—Fred Wilms.....Quincy, Ill.
TR—S. W. Eldred, " "
GM—S. W. Eldred, " "
GS—F. E. Wilms.....Athens, Ill.
Sales Agent, S. W. Eldred, Quincy, Ill.

Dawson Mine, Shaft, No. 5 Seam, 5 to 6 ft. thick.
PO—Dawson, Ill.; SP—Same CTY—Sangamon; RR—Wabash.
MS—W. E. Wilms.....Dawson, Ill.
SM—W. E. Wilms, " "
S of H—Rope and mules.
S of M—Hand.
PP—1 pump.
Athens Mine, Shaft, No. 5 Seam, 6 ft. thick.
PO—Athens, Ill.; SP—Same; CTY—Menard; RR—C. P. & St. L.
MS—F. E. Wilms.. ..Athens, Ill.
S of H—Mules.
S of M—Hand.
PP—1 Pump.

WANTLING, ISAAC & CO.
PO—Peoria, Ill.
Temporarily closed.

WARSAW COAL CO.
Warsaw Mine, Drift, No. 5 Seam, 53 in. thick.
PO—Edwards, Ill., SP—Same, CTY—Peoria; RR—C. B. & Q.
PR—H. W. Lynch.....Peoria, Ill.
TR—H. W. Lynch, " "
GM—E. B. Hale, " "
PA—E. B. Hale, " "
GS—M. Cusack.....Edwards. Ill.
EM—R. Taggart, " "
S of H—1 Elec. loco., track gauge 34 in.
S of M—Hand.
PP—2 Return tubular boilers, total 175 H. P., 1 gen. unit, 250 volts D. C.
EMP—110. Last fiscal year output, 48,421 tons.
Sales Agent, H. W. Lynch, Peoria, Ill.

WASSON COAL CO.
Wasson No. 1 Mine; Shaft; No. 5 Seam, 54 to 78 in. thick.
PO—Wasson, Ill.; SP—Same;—CTY—Saline; RR—C. C. C. & St. L.
PR—J. T. Olyphant...Vincennes, Ind.
TR—F. L. Olyphant, " "
GS—Wm. Johnson.....Vincennes, Ind.
GM—C. M. Wasson....Harrisburg, Ill.
PA—J. L. Pickering....Harrisburg, Ill.
EM—W. E. Buss, " "
MS—Wm. Griffin, " "
SM—Val. Wasson, " "
S of H—4 Elec. loco. and mules; track gauge 40 in.
S of M—17 Elec. mach.
PP—4 Boilers, total 600 H. P., 2 gen. units 250 volts D. C., 2 pumps, also purchase power.
EMP—500. Last fiscal year output 550,000 tons.
Sales Agent, Ed. Qualkingbush, Old Colony Bldg., Chicago, Ill.

WATSON COAL CO.
Nos. 1 and 2 Mines; Shaft; No. 6 Seam, 9 ft. thick.
PO—Herrin, Ill.; SP—Same; CTY—Williamson; RR—St. L. M.
PR—W. A. Perrine.....Herrin, Ill.
GM—W. A. Perrine, " "
PA—W. A. Perrine, " "
EM Roy Adams, " "
S of H—Gasoline motor and mules.
S of M—Hand.
PP—Boiler 50 H. P.
Last fiscal year output 109,700 tons.

WENONA COAL CO.
Wenona No. 1, Shaft; No. 2 Seam; 2 ft. 8 in. to 5 ft. thick.
PO—Wenona, Ill.; SP—Same; CTY—Marshall; RR—Illinois Central, Chicago & Alton,
PR—George S. Monser....Wenona, Ill.
TR—Wm. E. Monser, " "
GM—George S. Monser, " "
MS—George S. Monser, " "
MM—Philip Christ, " "
SCO—George S. Monser Co.; Buyer, Geo. S. Monser.
S of H—Tail rope track gauge 21 in.
S of M—Hand.
PP—7 Return tubular boilers, total 350 H. P., 2 pumps.
BR—M. O. P.
EMP—270. Last fiscal year output 132,637 tons.
Sales Agent, Wm. E. Monser.

WEST END COAL CO.
West End Mine, Shaft; No. 5 Seam, 5 ft. 10 in. to 6 ft. thick.
PO—Springfield, Ill., SP—Same, CTY—Sangamon; RR—B. & O., C. & N. W., Wab., C. H. D.
PR—Chas. H. Hurst....Springfield, Ill.
TR—Chas. A. Starne, " "
GM—Chas. H. Hurst, " "
GS—W. F. Davis, " "
S of H—2 Elec. loco., track gauge 42 in.
S of M—Hand.
PP—1 pump, 4 return tubular boilers, total 500 H. P., 250 volts D. C.
EMP—251. Last fiscal year output, 185,000 ons.
Sales agent, P. G. Matheny, Springfield, Ill.

WEST SIDE COAL CO.
Consol Mine; Shaft; No. 7 Seam, 66 to 78 in. thick.
PO—Coulterville, Ill.; SP—Same; CTY—Randolph.
PR—Walter Heiple.....Coulterville, Ill
GS—Walter Heiple, " "
MS—Walter Heiple, " "
TR—L. O. Jones, " "
GM—L. O. Jones, " "
MM—Robert Schumacher, " "
SM—M. J. Dickey, " "
EM—W. A. Reiss.....Belleville, Ill
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, total 160 H. P., 1 pump.
EMP—76. Last fiscal year output, 10,000 tons.
Sales Agency, St. Louis Coal Co., St. Louis, Mo., successors to the Underwood Coal & Mining Co.

WEST FRANKFORT COAL CO.
West Frankfort No. 1 Mine, Shaft; No. 96 to 120 in. thick.
PO—W. Frankfort, Ill.; SP—Same; CTY—Franklin; RR—C. & E. I., and C. B. & Q.
PR—Thos. Horn.....Du Quoin, Ill.
TR—Robt. Forsyth..W. Frankfort, Ill.
GM—Robt. Forsyth, " "
PA—Robt. Forsyth, " "
MS—Robt. Forsyth, " "
EE—August Tilliski, " "
MM—J. W. Smith, " "
EM—L. T. Putnam.....Benton, Ill.
S of H—Mules and 3 elec. loco.
S of M—13 Elec. mach.
PP—4 return tubular boilers, total 800 H. P., 1 gen. unit, 250 volts, D. C., 3 pumps.
EMP—270. Last fiscal year output 300,000 tons.
Sales Agent, Borders Coal Co., 1432 Syn. Trust Bldg., St. Louis, Mo., and Harris & Dillavon, Illinois Bldg., Champaign, Ill.

WEST VIRGINIA COAL COMPANY.
Ideal Mine, Shaft; No. 7 Seam; 7½ ft. thick.
PO—Marion, Ill.; CTY—Williamson;
PR—J. C. Hamilton.....Marion, Ill.
GM—Geo. A. Wallace, " "
MS—Geo. A. Wallace, " "
PA—W. H. McAlpin, " "
MM—D. N. Baker, " "
S of H—Mules and 1 elec. loco.; track gauge 42 in.
S of M—10 Elec. mach.
PP—Water tube boilers total 450 H. P., 2 gen. units, 250 volts, D. C.; 5 pumps.
EMP—200. Last fiscal year output 248,000 tons.
Sales Agent, John Henderson, St. Louis, Mo.

WESTERN COAL & MINING CO.
General Office, St. Louis, Mo.
18 Mines in Kans., Ill., Ark. and Mo.
Bush Mine No. 1, Shaft, No. 6 Seam, 7½ ft. to 6 ft. thick.
PO—Bush, Ill.; SP—Same, CTY—Williamson; RR—St. L. I. M. & S.
PR—W. J. Jenkins.....St. Louis, Mo.
GM—W. J. Jenkins, " "
TR—F. M. Hickman..St. Louis, Mo.
GS—J. H. Shaw, " "
PA—D. Simpson, " "
CE—C. L. Moorman, " "
SB—J. L. Worrall, " "
MM—E. A. Carson.....Hurst, Ill.
EE—J. M. Kossenjans.....Bush, Ill.
MS—A. H. Shaw, " "
SM—J. H. Pumphrey, " "
Cashier, C. L. Allan, " "
S of H—Mules and 4 elec. loco., track gauge 42 in.
S of M—Hand.
PP—8 Pumps, 5 return tubular O'Brien boilers, total 575 H. P., 2 gen. units 250 volts, D. C.
EMP—425. Annual output 234,735 tons.
Sales Agent, C. M. Snow, St. Louis, Mo.

WHITE COAL CO.
PO—R. D. Swansea, Belleville, Ill.; CTY—St. Clair.
GM—John White, 1717 West Main St.; Belleville, Ill.

WILLIAMSON COUNTY COAL CO.
General Office, Equitable Bldg., St. Louis, Mo.
Black Brier Mine; Shaft, No. 7 Seam, 84 to 120 in. thick.
PO—Johnston City, Ill.; SP—Same; CTY—Williamson; RR—C. & E. I.
PR—Louis F. Lumaghi, St. Louis, Mo.
GM—Jos. D. Lumaghi, " " "
GS—Harry Barlow, Johnston City, Ill.
MS—Harry Barlow, " " "
PA—A. C. Powell, " " "
EM—A. C. Powell, " " "
MM—Jos. Rapp, " " "
S of H—Elec. motors and mules; track gauge, 26 in.
S of M—Hand.
PP—4 Return tubular boilers, total 800 H.P., gen. unit, 150 volts; 4 pumps.
EMP—250. Last fiscal year output, 200,000 tons.
Sales Agent, J. J. O'Donnell, St. Louis, Mo.

WILLIAMSVILLE COAL CO.
General Office, Springfield, Ill.
Williamsville Mine, Shaft, No. 5 Seam, 6 ft. 2 in. to 5 ft. 4 in. thick.
PO—Selbytown, Ill.; SP—Williamsville; CTY—Sangamon; RR—C. & A.R.R.

WILLIS COAL & MINING CO.
General Office, 710 Fullerton Bldg., St. Louis, Mo.
PR—E. H. Krause, Fullerton Bl. St.L.,Mo.
TR—E. H. Krause, " "
GM—C. H. Krause, " "
PA—H. H. Schroeder, " "
EM—A. K. Stewart....Willisville, Ill.
GS—Thos. Jeremiah, " "
EE Lee Bayer, " "
Sales Agent, W. F. Steger, St. Louis, Mo.

Willis No. 1, Shaft, No. 6 Seam, 5 to 6 ft. thick.
PO—Willisville, Ill., SP—Same, CTY—Perry; RR—M. & O.
MS David Hopkins....Willisville, Ill.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—6 Elec. mach.
PP—1 Air comp., 4 pumps, 5 water tube O'Brien boilers, total 750 H. P., 200 K. W., 250 volts D. C.
EMP—208. Annual output 236,602 tons.

Willis No. 6, Shaft, No. 6 Seam, 7 to 5 ft. thick.
PO—Percy, Ill., SP—Same, CTY—Randolph; RR—M. & O.
MS—W. Flynn.....Percy, Ill
S of H—4 elec. loco.; track gauge 36 in.
S of M—10 Elec. mach.
PP—1 Air comp., 2 pumps, 4 O'Brien. water tube boilers, total 600 H. P., 150 K. W., 250 volts, D. C.
EMP—227. Annual output 290,770 tons.

WILMINGTON COAL MINING & MANFG. CO.
Mine, Shaft, No. 2 Seam, 3½ to 4½ ft. thick.
PO—Torino, Ill., SP—Caster, Ill., on E. J. & E., and Braceville, Ill., on C. & A.; CTY—Williamson.
PR—Geo. Gray.....Columbus, Ohio
TR—R. L. Fordyce.....Chicago, Ill.
GM—R. L. Fordyce, " "
PA—R. L. Fordyce, " "
GS—Alex. Skinner.....Torino, Ill.
EM—John McVicar, " "
MS—John Wilson.....Torino, Ill.
SCO—Skinner Bros., Buyer, David Skinner, Torino, Ill.
S of H—Mules; track gauge 28 in.
S of M—Hand.
PP—8 Water tube boilers, total 750 H. P., 1 pump.
EMP—240. Last fiscal year output, 70,000 tons.

WILMINGTON STAR MINING CO.
General Office, Chicago, Ill.
Nos. 6 and 7 Mines; Shaft; No. 2 Seams, 3 ft. thick; operate washery.
PO—Coal City, Ill.; SP—Same; CTY—Grundy; RR—E. J. & E., C. & A., A. T. & S. F.
PR—Gordon Buchanan....Chicago, Ill.
TR—D. W. Buchanan, " "
PA—P. W. Beda.....Chicago, Ill.
MS—Hugh Miller.....Coal City, Ill.
SM—H. A. Campbell, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—12 Return tubular boilers.
EMP—(7) 250. (No. 6) Idle since July, 1913. Last fiscal year output 103,300 tons.
Sales Agency, Buchanan Coal Co., J. W. Sales Agency, Buchanan Coal Co., Minneapolis, Minn., Omaha, Neb., and Chicago, Ill.

WILSON BROS. COAL CO.
Eden Mine, Shaft; No. 6 Seam; 5 to 6 ft. thick.
PO—Sparta, Ill.; SP—Same; CTY—Randolph; RR—M & O.
PR—P. B. Stephenson.....Sparta, Ill
PR—T. B. Stephenson....Sparta, Ill.
PA—Carl C. Stephenson, " "
GM—C. H. Krause, 710 Fullerton Bldg., St. Louis, Mo.
GS—Thos. Jeremiah....Willisville, Ill.
MS—John Petty.....Sparta, Ill.
S of H—1 Elec. loco.; track gauge 29¼ in.
S of M—4 Elec. mach.
PP—2 Brownell return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts, D. C.
EMP—125. Last fiscal year output 90,000 tons

WILSON COAL CO.
Galum Mine; Shaft; No. 6 Seam; 6 ft. thick.
PO—Cutler, Ill.; SP—Same; CTY—Perry; RR—W. C. & W.
GM—Alex. M. Wilson.....Cutler, Ill.
PA—Alex. M. Wilson, " "
MS—Alex. M. Wilson, " "
S of H—Mules.
S of M—Hand.
PP—Boiler, 60 H. P., and 2 pumps.
EMP—20. Last fiscal year output 22,130 tons.

WOLSCHLAG CO-OPERATIVE COAL CO.
Seam 48 in. thick.
PO—Peoria, Ill; SP—S. Bartonville, Ill.; CTY—Peoria; RR—P. & P W., P. R. T.
PR—G. A. Ditewig.....Peoria, Ill.
GM—G. A. Ditewig, " "
TR—Jas. F. McElwee, " "
S of H—3 Elec. loco and mules.
S of M—Hand. .. ..
PP—Elec., 2 pumps; Power purchased.

WOODSIDE COAL CO.
Woodside Mine, Shaft, No. 5 Seam, 5 ft. 10 in. thick.
PO—Springfield, Ill.; SP—Same; CTY—Sangamon; RR—Wabash.
PR—Stuart Brown .... Springfield, Ill.
TR—Stuart Brown, " "
GM—Stuart Brown, " "
PA—H. Brown, " "
MS—Robt. Wilson, " "
S of H—2 Elec. loco., track gauge 3 ft. 8 in.
S of M—Hand.
PP—4 Springfield return tubular boilers, total 400 H. P., 2 gen. units, 500 volts, D. C., 2 pumps.
EMP—380. Last fiscal year output 322,000 tons.
Sales Agent, H. J. Dudley, Springfield, Ill.

WYOMING MINING CO.
No. 1 Mine; Shaft; No. 6 Seam, 4½ ft. thick.
PO—Wyoming, Ill.; SP—Same; CTY—Stark; RR—C. B. & Q.
GM—James Highbee....Wyoming, Ill.
PA—James Highbee, " "
EM—L. C. Highbee, " "
MS—L. C. Highbee, " "
S of H—Mules.
S of M—Hand.
PP—3 Boilers.
EMP—33. Last fiscal year output 13,326 tons.

ZIEGLER DISTRICT COLLIERY COMPANY.
See Christopher Coal Mining Co.
PR—J. G. Bengel....Springdale, Ill.
TR—H. G. Bengel, " "
PA—J. Ernest Scott, " "
GS—J. Ernest Scott, " "
GM—J. Ernest Scott, " "
EM—J. C. Morgan, " "
S of H—Mules, track gauge 47½ in.
S of M—Hand.
PP—3 Return tubular Springfield Boiler Co. boilers, total 285 H. P., pumps.
EMP—190. Annual output 144,500 tons.
Sales Agent, Lincoln Springfield Coal Co., Chicago, Ill.

INDIANA

For List of Abbreviations See Page 498.

AMERICAN COAL MINING COMPANY.
General Office, Brazil, Ind.
Mine No. 1, Shaft; No. 5 Seam; 81 to 90 in. thick.
PO—Bicknell, Ind.; SP—Same; CTY—Knox; RR—Vandalia Ry.
PR—W. M. Zeller.....Brazil, Ind.
TR—W. J. Snyder, " "
GM—H. G. Conrad.....Bicknell, Ind.
PA—H. G. Conrad, " "
MS—H. G. Conrad, " "
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—6 Elec. mach.
PP—4 Heine water tube boilers, toal 1224 H. P., gen. units, 440 volts A. C., 60 cycles.

AMERICAN SEWER PIPE CO.
2 Mines in Ohio and 1 in Indiana.
General Office, Akron, O.
PR—Geo. R. Hill.....Akron, Ohio
TR—A. S. McCombe, " "
GM—A. S. McCombe, " "
GS—Marshall Caine, " "
PA—Geo. Piper, " "
CE—R. H. Russell, " "
EM—R. H. Russell....Akron Ohio.
EE—R. H. Russell, " "
MM—W. H. Rook, " "

No. 31 Mine, Shaft, Seam 36 to 48 in. thick.
PO—Brazil, Ind.; SP—Same; CTY—Clay; RR—Vandalia.
MS—Frank Cornahan.....Brazil, Ind.
S of H—Mules; track gauge 28 in.
S of M—Hand.
PP—1 Gen. unit, 110 volts D. C., 3 pumps.
EMP—17. Last fiscal year output, 16,068 tons.
Consume output.

ARCHBOLD, JOHN, COAL CO.
General Office, Evansville, Indiana.
1 Mine in Indiana and one in Kentucky.
Red Shaft Mine; Shaft; No. 9 Seam, 50 in. to 53 in. thick.
PO—Newburgh, Ind., SP—Same, CTY—Greene, RR—C. T. H. & S. E.
PR—John Archbold....Evansville, Ind.
TR—V. D. Herrenbruck..Evansville, Ind.
GM—John Archbold, " "
PA—John Archbold, " "
CE—John Archbold, " "
GS—Edmund Archbold..Newburgh, Ind.
EM—Wm. Abshire.....Newburgh, Ind.
MM—Edmund Archbold, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—100. Last fiscal year output, 42,642 tons.

AVERILL COAL MINING CO.
General Office, 507 McCormick Bldg., Chicago, Ill.
Hamilton Mine, Shaft, No. 4 Seam, 6 ft. thick.
PO—Hymera, Ind., SP—Same; CTY—Sullivan; RR—C. & E. L., Seifert, Branch.
PR—C. A. Bickett.....Chicago, Ill.
GM—C. A. Bickett, " "
TR—Chas. Newton, " "
PA—Chas. B. Cone, " "
MS—E. G. Lewis..Terre Haute, Ind.
EM—Rush & Everson, " "
S of H—Mules and 2 gaso. loco.; track gauge 38 in.
S of M—Hand.
PP—2 Atlas water tube boilers, total 250 H. P.
EMP—225. Last fiscal year output 201,663 tons.
Sales Agent, G. D. Rosengrant, 507 McCormick Bldg., Chicago, Ill.

AYRDALE COAL CO.
Ayrdale Mine, Shaft; No. 4 Seam; 4½ to 5 ft. thick.
PO—Jasonville, Ind.; SP—Same; CTY—Greene, RR—C. T. & S. E.
PR—W. J. Freeman..Terre Haute, Ind.
GM—Jasper Schloot.....Linton, Ind.
PA—Jasper Schloot.....Linton, Ind.
TR—Jasper Schloot.....Linton, Ind.
GM—Jasper Schloot, " "
MS—Jules Surmont.....Jasonville, Ind.
S of H—Elec. loco.; track gauge 42 in.
S of M—3 Elec. mach.
PP—2 Boilers total 300 H. P.; 1 pump
EMP—150. Last fiscal year output 146,000 tons.

AYRSHIRE COAL CO.
General Office, Oakland City, Ind.
PR—David Ingle..Oakland City, Ind.
TR—David Ingle....Oakland City, Ind.
GM—W. D. Ingle, " "
PA—W. D. Ingle, " "
EM—R. N. Jackson..Oakland City, Ind.
GS—J. W. Powell.....Winslow, Ind.
EE—Walter Jenkins.....Winslow, Ind.
SCO—Ingle Supply Co., Buyer Cal Whitman, Oakland City, Ind.
No. 7 Mine; Shaft; No. 5 Seam, 5 to 7 ft. thick.
PO—Oakland City, Ind.; SP—Ayreshire, Ind.; CTY—Pike; RR—Sou; Louisville & St. Louis Div.
MS—John Vinyard.....Winslow, Ind.
S of H—6 Elec. loco.; track gauge 36 in.
S of M—12 elec. mach.
PP—4 Erie return tubular boilers, total 600 H. P., 2 gen. units, 250 volts D. C. 6 elec. pump.
EMP—180. Last fiscal year output 117,510 tons.
No. 5 Mine;; Slope; No. 5 Seam 58 to 66 in. thick.
PO—Oakland City, Ind.; SP—Ayrshire; CTY—Pike; RR—Sou; Louisville & St. Louis Div.
MS—Arnold Horstmeyer...Winslow, Ind.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—3 Elec. mach.
PP—1 M. G. Set, 250 volts, D. C., 3 pumps, power purchased.
56,400 tons.
EMP—65. Last fiscal year output
No. 4 Mine; Drift; Ind. No. 5 Seam, 56 to 70 in. thick; operate washery 20 tons capacity.
PO—Oakland City, Ind.; SP—Ayrhire; CTY—Pike; RR—Sou; Louisville & St. Louis Div.
MS—Wm. Barrowman....Winslow, Ind.
S of H—3 Elec. loco. and mules; track gauge 36 in.
S of M—7 Elec. mach.
PP—2 M. G. Sets, 250 volts D. C., 4 elec. pumps, power purchased.
EMP—175 Coke ovens 30 Bee Hive. Last fiscal year output 144,200 tons.

BICKNELL MINING COMPANY.
Bicknell Mine, Shaft, No. 5 Seam, 4 to 8 ft. thick.
PO—Bicknell, Ind. SP—Same. CTY—Knox.
PR—T. M. Byers, ... Bicknell, Ind.
MS—T. M. Byers, " "
TR—C. E. Freeman, " "
PA—C. E. Freeman, " "
Bicknell Mining Company.—Cont
EM—John Rogers, ...Bicknell, Ind.
S of H—Mules track gauge 36 in.
S of M—8 Elec. mach.
PP—3 return tubular boilers.
EMP—193. Last fiscal year output 180,994 tons.

BIG FOUR COAL CO.
Big Four No. 3 Mine; Slope; No. 5 Seam, 60 to 90 in. thick.
PO—Boonville, Ind.; SP—Same; CTY—Warrick; RR—Sou., St. Louis Div.
PR—George P. Nester, Boonville, Ind.
GM—George P. Nester, " "
TR—J. F. Heinzle, " "
GS—John E. Kelly, " "
PA—John E. Kelly, " "
CE—John E. Kelly, " "
MM—De La Foon, " "
MS—John O'Laughlin, " "
S of H—1 Elec. loco. and mules; track gauge 36 in.
S of M—4 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., gen. units, 250 volts D. C., 2 pumps.
EMP—150. Last fiscal year output, 97,446 tons.

BIG VEIN MINING CO.
Big Vein Mine, Shaft, No. 5 Seam, 7½ to 11 ft. thick.
PO—Coalmont, Ind. SP—Same. CTY—Clay. RR—C. T. & S. E.
PR—W. W. Ray, .. Terre Haute, Ind.
GM—W. W. Ray, " " "
TR—W. L. Williamson..Terre Haute, Ind.
PA—W. L. Williamson, " "
S of H—Mules. Track gauge 36 in.
S of M—12 comp. air machines.
PP—3 Return tubular boilers, total 310 H. P., 2 air compressors, 1 pump.
EMP—250. Last fiscal year output 180,000 tons.

BOGLE, W. S. & CO., INC.
General Office, 343 S. Dearborn St., Chicago, Ill.
Esanbee Nos. 1 and 2 Mines, Shafts, Nos. 4 and 5 Seams, 66 to 90 in thick.
PO—Terre Haute, Ind. SP—Blandford. CTY—Vermillion. RR—C. T. H. & S. E.
PR—W. S. Bogle, ... Chicago, Ill.
TR—H. A. Stark, " "
GM—John S. Shirkie, Terre Haute, Ind.
PA—John S. Shirkie, " "
MS—John S. Shirkie..Terre Haute, Ind.
S of H—3 elec. loco. and 3 storage battery locos. Track gauge 42 in.
S of M—Hand.
PP—6 Brownell & Erie return tubular boilers, total 900 H.P., 2 gen. units, 250 volts D.C., 2 pumps. New mines.

BOONE COAL CO.
John Bull Mine; Shaft; No. 5 Seam, 60 to 84 in. thick.
PO—Boonville, Ind.; SP—Same; CTY—Warrick; RR—Southern.
PR—Jas. Newby.....Boonville, Ind.
TR—Clem. E. Doane, " "
GM—Clem E. Doane, " "
GS—Clem E. Doane, " "
PA—Clem E. Doane, " "
MS—Lon Shaw, " "
S of H—Mules; track gauge, 42 in.
S of M—10 Comp. air machines.
PP—Brownwell return tubular boiler, 300 H. P.; 1 air pump, and 2 pumps.
EMP—40. Last fiscal year output, 20,000 tons.

BRAZIL COLLIERIES CO.
Brazil Collieries No. 1 Mine, Shaft, Semi-Block, 4 ft. to 4 ft. 3 in. thick.
PO—Brazil, Ind.; SP—Billtown, Ind.; CTY—Clay.; RR—C. & E. I.
PR—A. L. Allars, ... Chicago, Ill.
TR—Wm. M. Zeller, ... Brazil, Ind.
GM—Simon Zeller, " "
PA—Simon Zeller, " "
MS—George Myers.....Brazil, Ind.
S of H—Mules.
S of M—Hand.
PP—2 Union City Water Tube Boilers, 2 pumps.
EMP—85. Last fiscal year output 70,000 tons.

BRYAN, JOS. A., COAL CO.
General Office, Evansville, Ind.
Chandler Mine, Shaft, No. 5 Seam, 4½ to 6 ft. thick.
PO—Chandler, Ind. SP—Same. CTY—Warrick. RR—Southern.
PR—J. A. Bryan, .. Evansville, Ind.
GM—J. A. Bryan, " "
PA—J. A. Bryan, " "
MS—Chas. Lay, " "
EM—Jas. H. Klee, " "
S of H—Mules. Track gauge 41 in.
S of M—Hand and 6 Comp. air mach.
PP—4 retun tubular boilers, total 300 H.P., 1 air comp., 1 pump.
EMP—75. Last fiscal year output 54,640 tons.

BUNSEN COAL CO.
General Office, So. La Salle St., Chicago, Ill.
1 Mine in Indiana, 3 Mines in Illinois.
PR—W. H. Clingerman, Carnegie Bldg., Pittsburgh, Pa.
TR—C. S. Wardley.....Chicago, Ill.
Secy—C. S. Wardley, " "
PA—J. C. Hoot, " "
GS—Thomas Moses.....Danville, Ill.
EM—A. F. Allard, " "
MM—W. A. Chandler....Westville, Ill.
EE—W. A. Chandler, " "
Universal Mine; Shafts; Nos. 4 and 5 Seams; 48 to 60 in. thick.
PO—Universal, Ind.; SP—Clinton, Ind.; CTY—Vermillion; RR—C. & E. I.
MS—Thos. Cokeley.....Universal, Ind.
S of H—3 Elec. loco. and 2 storage batteries; track gauge 42 in.
S of M—19 Elec. mach.
PP—4 Water tube boilers, total 1496 H. P., 3 gen. units D. C., 2 pumps.

CALEDONIA MINING CO.
General Office, Louisville, Ky.
Caledonia Mine, Shaft, "Bituminous No. 5 Seam, 4 to 5½ ft. thick.
PO—Boonville, Ind. SP—De Forest, Ind. CTY—Warrick. RR—Southern.
PR—Edw. J. Hackett, Louisville, Ky.
GM—Edw. J. Hackett, " "
PA—Edw. J. Hackett, " "
TR—L. Glonglere, " "
MS—Chas. H. Wilder, Boonville, Ind.
S of H—Mules. Track gauge 35½ in.
S of M—9 comp. air machines.
PP—3 return tubular boilers, total 300 H. P., 1 generating unit, 2 compressors, 1 pump.
EMP—70. Last fiscal year output 91,250 tons. Sales agent, Edw. J. Hackett, Louisville, Ky.

CALORA COAL COMPANY.
General Office, Terre Haute, Ind.
Calora Mine, Shaft, Fourth Seam, 5 to 4½ ft. thick.
PO—Jasonville, Ind. SP—Same. CTY—Greene. RR—C. T. H. & S. E.
GM—C. H. Jones, ..Terre Haute, Ind.
PA—C. H. Jones, " " "
S of H—2 elec. loco. Track gauge 42 in.
S of M—9 Elec. machines.
PP—4 Water tube boilers, total 800 H. P., 1 generating unit, 250 volts D.C., 1 air comp., 3 pumps.
EMP—150. Last fiscal year output 200,000 tons.

CARLISLE COAL & CLAY CO.
See Chicago-Carlisle Coal Co.

CATCHING & ELLIOTT.
Out of business.

CHANDLER COAL CO.
Absorbed by J. A. Bryan Coal Co.

CHICAGO-CARLISLE COAL CO.
Viola Mine, Shaft No. 5 Seam, 60 in. thick.
PO—Carlisle, Ind. SP—Same. CTY—Sullivan. RR—C. & E. I.
PR—G. A. Van Dyke, 1217 Fisher Bldg., Chicago, Ill.
TR—W. A. Patterson. 1217 Fisher Bldg., Chicago, Ill.
MS—W. F. Dodge, ... Carlisle, Ind.
PA—W. F. Dodge, " "
EM—Joe Stievenart.....Brazil, Ind.
S of H—Mules, and 1 elec. loco., track gauge 36 in.
S of M—Hand.
PP—2 Atlas return tubular boilers, total 500 H. P., gen. unit, 250 volts, D. C. and 1 pump.
EMP—100. Last fiscal year output, 75,000 tons.
Sales agent, Harrisburg-Franklin Coal Co., 1217 Fisher Bldg., Chicago, Ill.

CLAY COUNTY BLOCK COAL COMPANY.
General Office, Terre Haute, Ind.
Monkey Mine, Shaft, Seam 3 ft. 6 in. to 5 ft. 6 in. thick.
PO—Coal Bluff, Ind. SP—Same. CTY Vigo. RR—C. & E. I.
PR—John J. Shae,. Terre Haute, Ind.
GM—John J. Shae, " "
PA—John J. Shae, " "
TR—F. O. Froeb....Terre Haute, Ind.
MS—J. P. Gilmour, " "
EM—Rush & Everson, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 160 H.P.,1 pump.
EMP—150. Last fiscal year output 69,090 ons. Sales agent, John J. Shae, Terre Haute, Ind.

CLAY PRODUCT CO., THE
Clay Product Mine, Stripping, Brazil Block Coal Seam, 3½ ft. to 4 ft. 2 in. thick.
PO—Brazil, Ind. SP—Same. CTY—Clay. RR—Vandalia.
PR—H. H. Titsworth, " "
Stock Ex. Bldg., Chicago, Ill.
TR—J. R. Jones. Stock Ex. Bldg., Chicago, Ill.
PA—Chas. F. Shannon,.. Brazil, Ind.
GS—Chas. F. Shannon,
MS—Samuel Holden.....Brazil, Ind.
MM—J. E. Hixon, " "
EE—Edw. Hughes,
S of H—1 steam loco. Standard RR track gauge.
S of M—Steam shovel.
PP—3 return tubular boilers, total 300 H.P., 3 engines.
EMP—30. Last fiscal year output 60,000 tons. Sales agent, F. W. Darling, Stock Exc. Bldg., Chicago, Ill.

CLINTON COAL CO.
Crown Hill Mines Nos. 1, 2, 3, 4, 5, and 6, Shafts No. 3, No. 4, and No. 5 Seam 52 to 76 in. thick.
PO—Clinton, Ind., SP Same and W. Clinton, Ind.; CTY Vermillion; RR —T. H. S. E. & C. E. I.
PR—H. C. Dies, ... Clinton, Ind.
TR—S. C. Stultz, " "
GM—H. M. Ferguson, " "
PA—H. M. Ferguson.....Clinton, Ind.
MS—A. Ferguson, and " "
W. F. Brown,
S of H—11 Elec. loco. and mules.
S of M—Hand and 12 elec. mach.
PP—22 Return tubular boilers, 8 pumps and 1 compressor.
EMP—1455. Last fiscal year output 597,101 tons.

COAL BLUFF MINING CO.
Plymouth No. 2 Mine.
PO—Terre Haute, Ind. SP—Same. CTY—Vigo. No report.

CONSOLIDATED INDIANA COAL CO.
General Office, 139 W. Van Buren St., Chicago, Ill. 6 mines in Indiana, 1 Mine in Iowa.
PR—H.W. Mudge, ... Chicago, Ill.
TR—G.H. Crosby, " "
GM—Carl Scholz, " "
PA—H.S. Mikesell, " "
Sales agency, Chicago, Ill., office.

Glendora, Indiana, No. 26 mine, Shaft, No. 6 Seam, 5½ ft. thick.
PO—Sullivan, Ind.; SP—Glendora, Ind.; CTY—Sullivan, RR—C. & E., I. & C. T. H. & S. E.
MS—J. R. Sharp.....Sullivan, Ind.
S of H—Mules and elec. Track gauge 42 and 38 in.
S of M—Hand and 6 Elec. mach.
EMP—325. Last fiscal year output 80,404 tons.

Hymera, Ind., Mine No. 32, Shaft, No. 5 Seam, 68 to 80 in. thick.
PO—Hymera, Ind. SP—Same. CTY—Sullivan; RR—C. T. H. & S. E.
MS—J. R. Sharp.....Sullivan, Ind.
S of H—Mules and elec. Track gauge 36 in.
S of M—5 Elec. mach. and hand.
EMP—275. Last fiscal year output 148,158 tons.

St. Clair Indiana No. 30, Shaft, No. 6 Seam, 5 ft. 5 in. thick.
PO—Shelburn, Ind.; SP—Hart Station, Ind.; CTY—Sullivan; RR—C. T. H. & S. E.
MS—J. R. Sharp.....Sullivan, Ind.
S of H—Mules and elec. Track gauge 38 in.
S of M—Hand and 14 elec. mach.
EMP—258. Last fiscal year output 176,890 tons.

Peerless, Ind., No. 27 Mine; Shaft; No. 6 Seam; 68 in. thick.
PO—Hymera, Ind.; SP—Seifert, Ind.; CTY—Sullivan RR—C. & E. T.
MS—J. R. Sharp.....Sullivan, Ind.
S of H—Elec. loco. and mules.
S of M—7 Elec. mach.
EMP—325. Last fiscal year output 21,957 tons.

CRAWFORD COAL CO.
Nos. 10 and 14 Mines, Shaft, Block Coal Seam 3 ft. to 4 ft. 6 in. thick
PO—Brazil, Ind. SP—Same. CTY—Clay RR—C. & E. I.
PR—John L. Crawford, Terre Haute, Ind.
TR—Jas. J. Bucklin, . Brazil, Ind.
PA—Jas. J. Bucklin, " "
EE—Victor Vandivor, " "
MS—Wm. Spears.....Brazil, Ind.
S of H—Mules.
S of M—Hand and 5 elec. mach.
PP—5 boilers, total 700 H. P., 1 comp. 5 pumps.
EMP—250. Last fiscal year output 58,144 tons. Sales agent, Geo. F. Getz, Chicago, Ill.

CRESCENT COAL COMPANY.
Crescent Mine, Shaft, No. 5 Ind. or No. 9 Kentucky Seam, 4 ft. 2 in. to 4 ft. 8 in. thick.
PO—Evansville, Ind. SP—Same. CTY—Vanderburg. RR—I.C., Evansville Belt.
PR—Jas. H. Moore, . Evansville, Ind.
GM—Jas. H. Moore, " "
PA—Jas. H. Moore, " "
TR—P. F. Herbert, " "
GS—J. N. Retlinger, " "
MS—Fred Sutheimer....Evansville, Ind.
EE—T. J. Phillips, " "
S of H—3 elec. locos. Track gauge, 39 in.
S of M—Hand.
PP—3 water tube boilers, total 450 H. P., 2 generating units, 220 volts D.C., 1 pump.
EMP—230. Last fiscal year output 141,000 tons. Sales agent Jas. H. Moore, Evansville, Ind.

CROW CREEK COAL MINING CO.
Husky Mine; Shaft; No. 5 Seam, 58 to 76 in. thick.
PO—Boonville, Ind.; SP—Same; CTY—Warrick; RR—Sou.
GM—Wm. Gough, ...Boonville, Ind.
S of H—Mules.
S of M—1 Elec. mach.
PP—Power purchased.
NOTE—Mine will be completed in the fall of 1915, and will have an output of 200 tons per day.

CYPRESS CREEK COAL CO.
Leased to Boone Coal Co.

DAVIESS COUNTY COAL COMPANY.
No. 4 Mine, Shaft, No. 4 Seam.
PO—Washington, Ind. SP—Montgomery. CTY—Daviess. RR—B. & O. S. W.
GM—C. C. Martin, .. Washington, Ind.
MS—E. K. Sudduth, " "
S of H—Mules.
S of M—Hand.
PP—2 boilers, total 300 H.P.
EMP—100.

DeCAMP BLOCK COAL & CLAY CO. THE
No. 4 Mine, Shaft, 2 ft. 10 in. to 4 ft. 6 in. thick. Block Seam.
PO—Brazil, Ind. SP—Same. CTY—Clay. RR—C.&E.I.
PR—J.B. DeCamp, ... Brazil, Ind.
GM—J.B. DeCamp, " "
MS—J.B. DeCamp, " "
SM—George DeCamp, " "
EM—Mr. Page, ... Terre Haute, Ind.
MM—Arthur DeCamp, .. Brazil, Ind.
S of H—Mules. Track gauge 3 ft. 8 in.
S of M—Hand.
PP—2 water tube boilers, 2 return tubular boilers, total 250 H. P., 3 pumps.
EMP—70 to 80. Last fiscal year output 25,000 tons. Sales agency, J. H. McClelland, Brazil, Ind.

DEEP FOURTH VEIN COAL CO., (Lessee)
General Office, Terre Haute, Ind.
PR—Robert J. Smith, Terre Haute, Ind.
TR—John M. Mauson, " " "
GS—Bruce Jeffers, West " " "
EE—Wm. Lovett, " " " "

Deep Vein Mine, Shaft, No. 4 Seam, 4½ to 5½ ft. thick.
PO—W. Terre Haute, Ind. SP—Macksville, Ind. CTY—Vigo. RR—Vandalia, Macksville North Br.
MS—Chas. Hill, W. Terre Haute, Ind.
S of H—2 elec. loco. and mules. Track gauge 36 in
S of M—7 elec. mach.
PP—4 return tubular boilers, total 600 H.P., 2 gen. units 500 volts D. C., 1 pump.
EMP—275. Last fiscal year output 240,000 tons.

DEEP VEIN COAL CO.
Leased to Deep Fourth Vein Coal Co.

DERING, J K COAL CO.
General Office, Chicago, Ill.
PR—J.K. Dering, ... Chicago, Ill.
TR—J.E. Ford, " "
PA—J. E. Ford.....Chicago, Ill.
GS—D.B. Medill, ... Clinton, Ind.

No. 1 Mine Shaft, No. 3, Seam, 6 ft. thick.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C.&E.I.
MS—F. B. Meese.....Clinton, Ind.
S of H—Elec. Track gauge 42 in.
EMP—215. Last fiscal year output, 127,404 tons.

No. 2 Mine, Shaft, No. 5 Seam, 4 ft. 9 in. thick.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C.&E.I.
MS—Edgar Harrison, ... Clinton, Ind.
S of H—Mules. Track gauge 36 in
EMP—235. Last fiscal year output, 125,296 tons.

No. 3 Mine, Shaft, No. 3 Seam, 6 ft. thick.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C.&E.I.
S of H—Mules. Track gauge 36 in.
EMP—107. Last fiscal year output, 23,741 tons.

No. 5 Mine, Shaft, No. 4 Seam, 3 ft. 11 to 4 ft. 2 in. thick.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C.&E.I.
MS—J. B. Medill .... Clinton, Ind.
S of H—Elec. and mules. Track gauge 37 in.
EMP 177. Last fiscal year output 125,146 tons.

No. 6 Mine, Shaft, No. 5 Seam, 4 ft. 9 in. thick.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C.&E.I.
MS—Wm. Wilson, ... Clinton, Ind.
S of H—Rope and mules. Track gauge 42 in.

No. 8 Mine, Shaft, No. 4 Seam, 4 ft. 4 in. to 4 ft. 11 in. thick.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C.&E.I.
MS—Joseph Robinson, .. Clinton, Ind.
S of H—Elec. and mules. Track gauge 37 in.
EMP—446. Last fiscal year output 269,077 tons.

DIAMOND COAL CO.
Diamond Mine, Shaft, Seam 4 ft. thick.
PO—Evansville, Ind. SP—Same. CTY—Vanderburg.
PR—Adolph B. Schmidt, Evansville, Ind.
TR—Gus B. Mann, " "
GM—Raymond N. Lannert, Evansville, Ind.
PA—Raymond N. Lannert, " "
MS—Pius Schultheis, " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—3 Return tubular boilers, total 180 H.P.
EMP—90.

DOMESTIC BLOCK COAL CO.
General Office, Indianapolis, Ind.
Kokomo Mine, Shaft, Brazil Block No. 1 Seam, 3 to 4 ft. thick.
PO—Brazil, Ind. SP—Same. CTY—Clay. RR—C.&E.I., Brazil Br.
PR—J.E. Frederick, .. Kokomo, Ind.
TR—W. B. Starr, " "
GS—C.E. Hoffman, ...Brazil, "
PA—C.E. Hoffman, Brazil "
MS—Geo. Came, " "
EM—C.H. Rumbaugh, " "
EE—James Barrowman, " "
S of H—Mules. Track gauge 32 in.
S of M—6 Elec. Mach.
PP—2 Erie and 1 Chandler & Taylor return tubular boilers, total 380 H.P., 1 gen. unit, 250 volts, D. C., 3 pumps.
EMP—75. Last fiscal year output 12,350 tons. Sales agent, H. C. Smith, Indianapolis, Ind.

EHRLICH-PIERCE MINING CO.
General Office, Turner, Ind.
PR—Jacob Ehrlich, ... Turner, Ind.
TR—Jacob Ehrlich, " "
GM—Jacob Ehrlich, " "
PA—Jacob Ehrlich, " "
SM—Ray Ehrlich, " "
GS—E. M. Pierce, ... Brazil, "
EM—R.L. McCormack, Terre Haute, "
Sales agency, S. Freshman, Fisher Bldg. Chicago, Ill.

Ray No. 2 Mine, Shaft, No. 3 Seam, 5 to 7 ft. thick.
PO—Seelyville, Ind. SP—Same. CTY—Vigo. RR—Vandalia.
MS—E.M. Pierce, ... Brazil, Ind.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—3 Cylinder boilers, total 150 H. P., 1 compressor and 4 pumps.
EMP—130. Five months' output, 31,833 tons.

Klondyke No. 3, Shaft, No. 3 Seam, 6 to 7 ft. thick.
PO—Turner, Ind. SP—Same. CTY—Clay. RR—Vandalia.
MS—Chas. Ehrlich, ... Turner, Ind.
S of H—Mules.
S of M—Hand.
PP—3 Cylinder boilers, total 125 H.P.
EMP—175. Last fiscal year output 100.398 tons.

ELBERFELD CO-OPERATIVE COAL CO.
Shaft Mine, Seam No. 5, 48 to 74 in. thick.
PO—Elberfeld, Ind.; SP—Same; CTY Warrick; RR—C. & E. I.
PR—C. A. Wiggs, ...Elberfeld, Ind.
GM—C. A. Wiggs, " "
GS—C. A. Wiggs, " "
PA—C. A. Wiggs, " "
CE—F. M. Nelson....Elberfeld, Ind.
TR—Albert Bleckman " "
S of H—Mules and gasoline loco.
S of M—Hand.
PP—1 Atlas Return tubular boiler, 150 H. P., 2 pumps.
EMP—50.
Output from Sept. to May, 16,618 tons.
Sales Agent, W. M. Stephenson, Indianapolis, Ind.

ELBERFIELD MINING CO.
Now Elberfeld Co-operative Coal Co.

EPWORTH COAL CO.
See Staser-Epperson Coal Co.

ERIE CANAL COAL CO.
General Office, Boonville, Ind.
Erie Canal Mine, Shaft, No. 5 Seam, 5 to 6 ft. thick.
PO—Chandler, Ind. SP—Same. CTY—Warrick. RR—Southern.
PR—T.D. Scales, ...Boonville, Ind.
GM—T. D. Scales, " "
PA—T.D. Scales " "
TR—W.F. Weyesbacher, " "
MS—W.W. Deane, .. Chandler, "
S of H—Mules and locos. Track gauge 36 in.
S of M—5 elec. machines.
PP—3 Erie horizontal tubular boilers, 1 generating unit, 2 pumps.
EMP—88. Last fiscal year output 78,175 tons.

EUREKA BLOCK COAL CO.
Eureka No. 5 Mine.
PO—Terre Haute, Ind. SP—Same. CTY Vigo. No report.

FAUVRE COAL CO.
See Sunbeam Coal Co.

FORSCHNER, T. J., COAL CO.
Sponsler Mine. Stripping, Linton No. 4 Seam, 54 to 66 in. thick.
PO—Linton, Ind. SP—Same. CTY—Greene. RR—C. T. H. & S. E.
PR—T. J. Forschner, 39 Glen Ave., Mt. Vernon, N.Y.
TR—Wm. P. Forschner....Linton, Ind.
GM—T. J. Forschner, 39 Glen Ave., Mt. Vernon, N. Y.
GS—Wm. P. Forschner....Linton, Ind.
PA—Wm. P. Forschner....Linton, Ind.
MS—L. L. Brown.....Linton, Ind.
S of H—2 Steam loco. Track gauge 36 in.
S of M—Steam shovel.
PP—1 air comp. and 2 pumps.
EMP—40. Last fiscal year output 75,000 tons.

FORT BRANCH COAL MINING CO.
Fort Branch Mine, Shaft, No. 5 Seam 66 to 78 in. thick.
PO—Fort Branch, Ind SP Same. CTY—Gibson. RR C.&E.I.
PR—W. A. Jackson, Evansville, Ind.
GM—W. A. Jackson, " "
PA—W. A. Jackson, " "
TR—W.W. Hubard, " "
MS—Henry Horn, ..Ft. Branch, "
S of H—Mules. Track gauge 38 in.
S of M—5 Elec. mach.
PP—2 Chandler and Taylor Return tubular boilers, total 300 H. P., 1 gen. unit 250 volts, D. C., 1 pump, power purchased.
EMP—82. Last fiscal year output, 79,747 tons. Sales agent W. A. Jackson, Evansville, Ind.

FOX HILL COAL MINING CO.
General Office, Huntingburg, Ind.
Fox Hill Mine, Slope, No. 5 Seam.
PO—Ayrshire, Ind. SP—Same. CTY—Pike. RR—Sou.
PR—H.S. Dowell, .. Walkerton, Ind.
TR—C.M. Dowell, Huntingburg, "
EM—Edmond C. Langrebe, Huntingburg Ind.
S of H—Mules.
S of M—Hand.
EMP—40.

GERMAN COAL COMPANY.
Out of business.

GIBSON-MOORE COAL CO.
Ingleside Mine.
PO—Evansville, Ind. SP—Same. CTY—Vanderburgh. No report.

GIVENS & SON COAL CO.
Givens No. 1 Mine.
PO—Brazil, Ind. SP—Same. CTY—Clay. No report

GLEN AYR COAL CO.
PR—Job Freeman,.. Terre Haute, Ind.
GM—Job Freeman, " " "
TR—W.J. Freeman, " " "
PA—W.J. Freeman, " " "
GS—C. J. Freeman....Terre Haute, Ind.
CE—C.H. McCormick, " " "
EE—James Patterson, " " "

Glen Ayr No. 1, Shaft, No. 4 Seam, 4 to 5½ ft. thick.
PO—Terre Haute, Ind. SP—Same. CTY Vigo. RR—Vandalia.
MS—Wm. Wright, ..Terre Haute, Ind.
S of H—3 elec. loco. and mules. Track gauge 40 in.
S of M—14 elec. mach.
PP—4 boilers, total 600 H.P., 3 gen. units, 250 volts D.C. and 3 pumps.
EMP—250. Last fiscal year output 241,000 tons.

Glen Ayr No. 2, Shaft, No. 4 Seam, 4 to 5 ft. thick.
PO—Terre Haute, Ind. SP—Same. CTY Vigo. RR—Vandalia.
MS—Samuel Ferguson, Terre Haute, Ind.
S of H—1 elec. loco. and mules. Track gauge 40 in.
S of M—10 elec. mach.
PP—2 boilers, total 250 H.P., 1 gen. unit, 250 volts D.C.
EMP—125. Last fiscal year output 46,000 tons.

GLENNDALE COAL CO.
Glenndale Mine.
PO—Terre Haute, Ind. SP—Same, CTY—Vigo. No report.

GOULD COAL WASHING & MNG. CO.
General Office, Indianapolis, Ind.
Mine No. 3, Shaft, No. 6 Seam, 5½ ft. thick. Operate Washery.
PO—Linton, Ind. SP—Same. CTY—Sullivan. RR—Vandalia Ry.
PR—Morton L. Gould, Indianapolis Ind.
GM—Morton L. Gould, " "
TR—Morton L. Gould. " "
PA—Morton L. Gould, " "
MS—Jos. Stevenson. .... Linton, "
S of H—Mules and two elec. loco.
S of M—Hand and 7 elec. machines.

GRANT COAL & MINING CO.
General Office, 1304 National Bank Bldg., Chicago, Ill.
Maple Grove Mine, Shaft, No. 5 Seam, 4 ft. 10 in. to 5 ft. 2 in thick.
PO—Terre Haute, Ind., SP—Libertyville, Ind. CTY—Vigo. RR—C. T. H. & S. E.
PR—J. E. Baum, Jr.....Chicago, Ill.
GM—J. E. Baum, Jr.....Chicago, Ill.

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GRANT COAL & MINING CO.—Continued.
GS—H. M. Stewart, Terre Haute, Ind.
SM—J. R. Tanner, " " "
CE—Rush & Everson, " " "
EM—Rush & Everson, " " "
MM—Fred Houser, New Goshen, "
EE—R. B. Coleman, " " "
SCO—Grant Mercantile Co. Buyer, Jno. R. Tanner, Terre Haute, Ind.
S of H—6 Storage Battery and 2 elec. loco.; track gauge 42 in.
S of M—Hand and 20 comp. air mach.
PP—5 Return tubular boilers total 675 H. P., 1 gen. unit 250 volts, D.C., 2 air comp, 1 pump.
EMP—350. Last fiscal year output 266,729 tons.
Sales agent, Theo Brent, Chicago, Ill.

GREEN VALLEY COAL COMPANY.
General Office, Terre Haute, Ind.
Green Valley Mine, Shaft, No. 4 Seam. 4½ ft. to 5½ ft. thick.
PO—Jasonville, Ind. SP—Same. CTY—Greene. RR—Chicago, Terre Haute & South Eastern.
PR—David Ingle, Oakland City, Ind.
TR—W. J. Freeman, Terre Haute, "
GM—W. J. Freeman, " " "
PA—W. J. Freeman, " " "
MS—Wm. James, .. Jasonville, Mo.
S of H—Mules and 2 elec. loco. Track gauge 38 in.
S of M—14 Elec. mach.
PP—4 boilers, total 750 H.P., 2 gen. units, 250 volts D.C., 3 pumps.
EMP—275. Last fiscal year output 244,000 tons.

GREGORY COAL MINING COMPANY.
See Shelburn Coal Company.

HAHL, C W COAL MINING CO. THE
Out of business.

HALL-ZIMMERMAN COAL CO.
See The Wizard Coal Co.

HARRISON COAL & MINING CO.
Harrison No. 5 Mine, Shaft, No. 2 Block Coal Seam, 3 to 4½ ft. thick.
PO—Clay City, Ind. SP—Same. CTY—Clay. RR—E. & I. Branch C. & E. I.
PR—W. C. Nash, ... Clay City, Ind.
TR—W. C. Nash, " " "
PA—W. C. Nash, " " "
GM—W. C. Nash....Clay City, Ind.
SM—R. C. Nash, " " "
GS—H. Whipman, " " "
MS—G. Graft, " " "
EM—G. Graft " " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 150 H. P., 3 gen. units, 2 pumps.
EMP—30. Last fiscal year output 22,000 tons.

HARRISON & SONS.
Harrison Mine, Slope, Seam 3½ ft. thick.
PO—Rockville, Ind. SP—Sand Creek, Ind. CTY—Parke. RR—Vandalia.
MS—W. P. Harrison, .. Rockville, Ind.
S of H—Mules.

HIGGINS-MARTIN COAL CO.
General Office, Terre Haute, Ind.
Pine Ridge Mine, Shaft, No. 5 Seam, 4 ft. 8 in. thick.
PO—Vermilion, Ill. R. R. No. 31. SP—Libertyville, Ind. CTY—Vigo. RR—C. T. H. & S. E.
PR—J. J. Higgins, ... Clinton, Ind.
TR—O. H. Martin, Terre Haute, "
GM—O. H. Martin, " " "
PA—O. H. Martin, " " "
GS—Thos. Rose, ... Vermilion, Ill.
CE—Rush & Everson, Terre Haute, Ind.
EM—Gar Dugger, ... Vermilion, Ill.
EE—Gar Dugger, " "
S of H—Mules and 1 elec. loco. Track gauge 40 in.
S of M—Hand.
PP—2 water Tube boilers, total 300 H.P., 1 gen. unit, 250 volts, 1 C., 1 pump.
EMP—165. Last fiscal year output 150,000 tons

INDIAN CREEK COAL & MINING CO.
General Office, 817 Traction Terminal Bldg., Indianapolis, Ind.
Indian Creek Mine, Shaft, No. 5 Seam, 6 to 7½ ft. thick.
PO—Bicknell, Ind.; SP—Same, CTY—Knox. RR—Vandalia.
PR—E. D. Logsdon, Indianapolis, Ind.
TR—B. E. Neal, " "
GM—E. E. Neal, " "
PA—C. N. Elliott, " "
MS—W. P. McQuade, .. Bicknell, "
S of H—4 elec. locos.
S of M—16 mach.
PP—7 Chandler & Taylor return tubular boilers, total 950 H. P., 3 Gen units, 250 volts D C.
EMP—160 Last fiscal year output 488,038 tons.

INDIANA SEMI BLOCK COAL COMPANY.
General Office, Catlin, Ind.
Indio Mine, Slope, No. 6 Seam, 7 ft. thick.
PO—Cates, Ind. SP—Same. CTY—Fountain. RR—T. St. L. & W.
PR—B. B. Taylor.....Catlin, Ind.
TR—B. B. Taylor, " "
GM—B. B. Taylor, " "
MS—Frank J. Durkin, .. Cates, Ind.
PA—Frank J. Durkin, " "
SM—Frank J. Durkin, " "
EM—Frank J. Durkin, " "
S of H—Mules, rope and 1 steam loco.
S of M—Hand.
EMP—52.

JACKSON HILL COAL & COKE CO.
General Office, Terre Haute, Ind.
PR—C. Fairbanks....Terre Haute, Ind.
TR—J. C. Kolsem, " "
GM—J. C. Kolsem, " " "
PA—J. C. Kolsem, " " "
SECY—B. F. Bailey, " " "
EM—Fred Rush, " " "
MS—W. E. Evans, " " "

No. 2 Mine, Shaft, No. 5 Seam.
PO—Sullivan, Ind. SP—Jackson Hill, Ind. CTY—Sullivan. RR—C. & E. I.
S of H—Elec. loco. and mules.
S of M—Elec. mach.
PP—Elec. A.C. voltage.

No. 4 Mine, Shaft, No. 6 Seam.
PO—Shelburn, Ind., SP—Kolsem, Ind. CTY—Sullivan. RR—C. & E. I.
S of H—Elec. loco. and mules.
S of M—Elec. machines.
PP—Elec. A.C. voltage.

No. 5 Mine, Shaft, No. 4 Seam.
PO—Clinton, Ind. SP—Same. CTY—Vermilion. RR—C. & E. I.
S of H—Elec. loco. and mules.
S of M—Elec. machines.
PP—Elec. A.C. voltage.

No. 6 Mine; Shaft; No. 5 Seam;
PO—Terre Haute, Ind.; SP—Libertyville, Ind.; CTY—Vigo, RR—C. T. H. & S. E.
S of H—Elec. loco.
S of M—Hand.
New Mine.

KETTLE VALLEY MINING COMPANY.
Kettle Creek Mine, Shaft, No. 6 Seam, 5 to 6 ft. thick.
PO—Shelburn, Ind. SP—Same. CTY—Sullivan. RR—Chicago, Terre Haute & South Eastern, Sullivan Branch.
PR—O. L. Kelso, ..Terre Haute, Ind.
TR—J. W. Frisz, " " "
GM—J. W. Frisz, " " "
PA—J. W. Frisz, " " "
MS—J. H. Woolley, ..Shelburn, Ind.
EM—R. L. McCormick, Terre Haute, "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—5 elec. machines.
PP—3 return tubular boilers, 325 H.P. 1 pump.
EMP—150. Sales agent, J. W. Frisz, Terre Haute, Ind.

KNOX COAL MINING COMPANY.
General Office; 37 W. Van Buren St., Chicago, Ill.
Knox Mine; Shaft No. 5 Seam, 66 to 96 in. thick.
PO—Bicknell, Ind.; SP—Same; CTY—Knox; RR—Vandalia, I. & V. Div.
PR—W. P. Worth.....Chicago, Ill.
TR—H. A. Huskey.....Chicago, Ill.
GM—H. A. Huskey.....Chicago, Ill.
PA—H. A. Huskey.....Chicago, Ill.
MS—Thos. Gillespie....Bicknell, Ind.
S of H—Mules and 3 Elec. loco.; track gauge 36 in.
S of M—14 Elec. mach.
PP—5 Water tube boilers, total 750 H. P., and 2 gen. units.

LARSH COAL CO.
Out of business.

LINCOLN COAL & MINING CO.
Lincoln Mine.
PO—Evansville, Ind.; SP—Same; CTY—Spencer.
No report.

LINN COAL COMPANY.
Linn Mine, Shaft; No. 6 Seam; 46 to 52 in. thick.
PO—Bicknell, Ind.; SP—Same; CTY—Knox; RR—Vandalia, Vincennes Div
PR—J. P. Allen.....Sullivan, Ind.
TR—W. R. Maddex....Bicknell, Ind.
GM—W. R. Maddex....Bicknell, Ind.
PA—W. R. Maddex.....Bicknell, Ind.
MS—Homer Cargal, " "
S of H—Mules; track gauge 3 ft.
S of M—Hand
PP—3 Brownell return tubular boilers total 450 H. P.
EMP—120. Last fiscal year output 10,663 tons.
Sales Agent, A. L. Brocksmith, Bicknell, Ind.

LITTLE, S. W., COAL CO. (THE)
General Office, Evansville, Ind.
PR—H. W. Little....Evansville, Ind.
GM—H. W. Little, " "
PA—H. W. Little, " "
TR—T. B. Sieffert, " "
GS—N. W. Thrall, " "
CE—Teume Engineering Co., " "
MM—Harley Kinmay..Petersburg, Ind.
EE—W. B. Beattie, " "
SCO—The Little's Mercantile Co., Buyer Clark Whitman, Petersburg, Ind.

Little's No. 1; Shaft; No. 5 Seam, 5½ to 8 ft. thick.
PO—Little's, Ind.; SP—Same; CTY—Pike; RR—C. & E. I.
MS—N. W. Thrall.....Little's, Ind.
S of H—2 Elec. loco. and mules; track gauge 40 in.
S of M—Hand.
PP—3 Wm. Pelz return tubular boilers, total 270 H. P., gen. unit 250 volts D. C., 3 pumps.
EMP—190.

Blackburn No. 1; Slope; No. 5 Seam 5½ to 11 ft. thick.
PO—Petersburg, Ind.; SP—Blackburn, Ind.; CTY—Pike; RR—C. & E. I.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Boilers, total 180 H. P.
EMP—35.

Blackburn No. 2; Shaft; No. 5 Seam, 5½ to 9 ft. thick.
PO—Petersburg, Ind.; SP—Blackburn, Ind.; CTY—Pike; RR—C. & E. I.
MS—W. B. Beattie.
S of H—2 Elec. loco. and mules; track gauge 40 in.
S of M—Hand.
PP—2 Return tubular boilers, total 250 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—125.

LOWER VEIN COAL CO.
General Office, Terre Haute, Ind.
PR—Geo. C. Richards..Terre Haute, Ind.
GM—Geo. H. Richards, " "
PA—Geo. H. Richards, " "
TR—Frank C. Fisbeck, " "
Sales Agent, Richards & Sons.

Lower Vein No. 1; Shaft; No. 5 Seam, 4 ft. 2 in. to 4 ft. 6 in.
PO—West Terre Haute, Ind.; SP—Richards Switch, Ind.; CTY—Vigo; RR—C. C. C. & St. L.
MS—Geo. H. Richards, Terre Haute, Ind.
S of H—1 Elec., 2 gasoline locos. and mules, track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 300 H. P. gen. units 250 volts D. C., 1 pump.
EMP—200. Last fiscal year output 80,000 tons.

Speedwell No. 2 Mine; Shaft; No. 4 Seam, 4 ft. 6 in. to 4 ft. 10 in.
PO—West Terre Haute, Ind.; SP—Richards Switch, Ind.; CTY—Vigo; RR—C. C. C. & St. L.
MS—Geo. H. Richards, Terre Haute, Ind.
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—8 Goodman elec. mach.
PP—4 Return tubular boilers total 600. H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—250. Last fiscal year output 270,000 tons.

McCLELLAND BLOCK COAL CO.
Nos. 9 and 5; Shaft.
PO—Brazil, Ind.; SP—Coal Bluff and Brazil; CTY—Clay; RR—C. & E. I. and Vandalia.
GM—J. H. McClelland....Brazil, Ind.
PA—J. H. McClelland, " "
MS—Archie Fisher, " "
S of H—Mules.
S of M—Hand.
PP—4 Boilers, 600 H. P.
EMP—300. Mines are about worked out, will be abandoned shortly, April 18, 1914.

McVICKER BROS. COAL CO.
Out of business.

MACKAY, D. J. & CO.
See Sunnyside Coal & Coke Co.

MENDEN, C. H., COAL CO.
Menden Mine, Shaft; No. 5 Seam; 5 to 6½ ft. thick.
PO—Boonville, Ind.; SP—De Forest, Ind.; CTY—Warrick; RR—Southern
PA—Edw. J. Hackett.....Louisville, Ky.
GM—Edw. J. Hackett, " "
TR—L. Glonglere, " "
MS—Chas. H. Wilder..Boonville, Ind.
S of H—Mules; track gauge 36 in.
PP—1 Water tube boiler, total 125 H. P.; 1 pump.
EMP—40. Last fiscal year output 63,875 tons.
Sales Agent, Edw. J. Hackett, Louisville, Ky.

MIAMI COAL CO.
General Office, Chicago, Ill.
PR—John T. Connery.....Chicago, Ill.
TR—H. F. Filer, " "
GM—J. P. Connery, " "
CE—Allen & Garcia Co., " "
GS—H. V. Sherburne.....Clinton, Ind.
PA—H. V. Sherburne, " "
MS—John Baird, " "
EE—Fred Doidge, " "
EM—Rush & Everson..Terre Haute, Ind.
Sales Agent, J. F. Connery, Chicago, Ill.

Miami No. 6 Mine; Shaft, No. 5 Seam, 57 to 69 in. thick.
PO—Clinton, Ind.; SP—Same, CTY—Vermillion RR—C. & E. I.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—Hand.
PP—3 Chandler & Taylor, return tubular boilers, 1 pump.
Last fiscal year output 263,328.18 tons.

Miami No. 8 Mine; Shaft, No. 4 Seam, 60 to 70 in. thick.
PO—Clinton, Ind.; SP—Same; CTY—Vermillion; RR—C. & E. I.
S of H—3 Elec. loco. and mules; track gauge 42 in.
S of M—14 Elec. mach.
PP—4 Chandler & Taylor return tubular boilers; 2 pumps.
Last fiscal year output 385,346.18 tons.

Miami No. 9 Mine; Shaft, No. 5 Seam, 57 to 69 in. thick.
PO—Clinton, Ind.; SP—Same; CTY—Vermillion; RR—C. & E. I.
S of H—1 Elec. loco. and mules; track gauge 42 in.
S of M—Hand.
PP—3 Chandler & Taylor return tubular boilers; 1 pump.
Last fiscal year output 3629.02 tons.

MIDDLE STATES COAL CO.
General Office, Chicago, Ill.
3 Mines in Indiana, 2 Illinois, 2 Ohio, Vivian Nos. 1, 2 and Lyford No. 1; Shafts No. 3 Seam.
PO—Terre Haute, Ind. and Clinton, Ind.; SP—Same; CTY—Vigo and Parke; RR—C. & E. I.
PR—T. J. O'Gara.....Chicago, Ill.
PA—H. C. Barnebee....Harrisburg, Ill.
GS—E. LeGhent.....Harrisburg, Ill.
S of H—Gasoline motors.
S of M—Comp. air.

MITCHEM COAL CO.
Advance Mine.
PO—Boonville, Ind.; SP—Same, CTY—Warrick.
No report.

MONON COAL CO.
General Office, Old Colony Bldg., Chicago, Ill.
PR—H. N. Taylor.....Chicago, Ill.
GM—H. N. Taylor, " "
TR—F. H. Thompson..Terre Haute, Ind.
PA—F. H. Thompson, " "
GS—R. M. Irving, " "
EE—C. E. Dillahunt....Shelburn, Ind.
SCO—Monon Store. Buyer, Jos. O'Hare, Sullivan, Ind.
Sales Agent, Arthur O'Connor Chicago, Ill.

Hocking No. 2 Mine; Shaft; No. 6 Seam, 6 ft. thick.
PO—Farmersburg, Ind., SP—Same; CTY—Sullivan; RR—C. & E. I.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—12 Elec. mach.
PP—4 Return tubular boilers, 2 gen. units 250 volts D. C., 1 pump.
EMP—200. Last fiscal year output 99,000 tons.

Rainbow Mine; No. 5; Shaft; No. 6 Seam, 6 ft. thick.
SP—Caledonia, Ind.; RR—I. C.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—Elec.
PP—5 Return tubular boilers, 2 gen. units, 250 volts D. C., 5 pumps.
EMP—250. Last fiscal year output 83,000 tons.

Lattas Creek Mine No. 6; Shaft; No. 4 Seam, 5½ ft. thick.
PO—Jasonville, Ind.; SP—Same; CTY—Greene; RR—C. I. & L., C. T. H. & S. E.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—19 Elec. mach.
PP—6 Return tubular boilers, 2 gen. units, 250 volts D. C., 5 pumps.
EMP—325. Last fiscal year output 335,000 tons.

Gilmour Mine No. 7; Shaft; No. 4 Seam, 5½ ft. thick.
PO—Midland, Ind.; SP—Same; CTY—Greene; RR—C. I. & L.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—12 Elec. mach.
PP—4 Return tubular boilers, 2 gen. units 250 volts D. C., 4 pumps.
EMP—250. Last fiscal year output 203,000 tons.
Continued on Next Page.

Cloverleaf No. 15; Shaft; No. 6 Seam, 6 ft. thick.
PO—Cass, Ind.; SP—Same, CTY—Sullivan; RR—C. I. & L., I. C.
S of H—1 Elec. loco.; track gauge 36 in.
S of M—9 Elec. mach.
PP—4 Return tubular boilers, 1 gen. unit 250 volts D. C., 2 pumps.
EMP—200. Last fiscal year output 207,000 tons.

Little Giant No. 14; Shaft; No. 6 Seam, 8 ft. SP—Victoria, Ind.; RR—C. I. & L., I. C.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—15 Elec. mach.
PP—4 Return tubular boilers, 3 gen. units 250 volts D. C., 2 pumps.
EMP—300. Last fiscal year output 120,000 tons.

Coal Washing Plant.
PO—Midland, Ind.; SP—Same; CTY—Greene, RR—C. I. & L.
PP—4 Boilers; 440 volts A. C.
Phoenix, Andromeda and Mammoth Mines abandoned Feb. 1, 1914.

MUTUAL MINING CO.
Out of business.

NASH COAL CO.
Harrison Mine, Drift, No. 6 Seam, 5½ to 6 ft. thick.
PO—Coal Bluff, Ind.; SP—Same; CTY—Vigo; RR—C. & E. I.
PR—V. H. Nash.....Coal Bluff, Ind.
SM—V. H. Nash, " "
TR—C. A. Nash, " "
MS—C. A. Nash, " "
GS—Daton Ferris, " "
CE—Geo. Fick, ... Terre Haute, "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—35. Last fiscal year output 40,000 tons.
Sales Agent, Murphy-Thompson Coal Co., Terre Haute, Ind.

NEAL, E. E.
General Office, Bloomfield, Ind.
Summit No. 2 Mine; Shaft.
PO—Linton, Ind.; SP—Same; CTY—Greene; RR—Vandalia.
GM—E. E. Neal, .. Bloomfield, Ind.
PA—E. E. Neal " "
EM—D. A. McWhirter....Linton, Ind.
MS—W. P. McQuade, " "
SM—E. Benjamin, " "
S of H—Mules.
S of M—Elec. mach.
PP—1 gen. unit, 250 volts D. C., 4 boilers, total 600 H. P.
EMP—300.

NEWBURGH COAL CO.
Epworth Mine; Shaft; No. 5 Seam, 44 to 54 in. thick.
PO—Newburg, Ind.; SP—Same; CTY—Warrick; RR—E. S. & N.
PR—Tom Jirlin.....Newburg, Ind.
TR—R. O. Humphrey, " "
GM—Wm. Epperson, " "
GS—Wm. Epperson, " "
PA—Wm. Epperson, " "
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, total H. P., 300.
EMP—60. Last fiscal year output, 19,000 tons.

NORTHERN COAL & SUPPLY CO.
General Office, Peoples Gas Bldg., Chicago, Ill.
1 Mine in Indiana, 1 Mine in Illinois.
Muren Mine; Slope; No. 5 Seam; 5 to 6 ft. thick.
PR—W. R. Tapper.....Chicago, Ill.
TR—J. H. Harmon, " "
GM—J. H. Harmon, " "
PA—J. H. Harmon, " "
S of H—1 Elec. loco.; track gauge 37 in.
S of M—5 Elec. mach., Jeffrey.
PP—3 Water tube boilers, total 360 H. P., 2 gen. units 440 volts A. C., 3 phase and 60 cycles, also purchase power.
Mine closed indefinitely since April 1st, 1914.
Sales Agent, J. H. Harmon, Chicago, Ill.

OHIO VALLEY COAL COMPANY.
General Office, Indianapolis, Ind.
Sunlight Mine; Stripping; No. 5 Ind. Seam, 6 to 10 ft. thick.
PO—Boonville, Ind.; SP—Same; CTY—Warrick; RR—Sou, St. Louis Div.
PR—Samuel Ashley..Indianapolis, Ind.
TR—Victor C. Kendall, " "
GM—John H. Blair....Boonville, Ind.
MS—Chas. R. Davis, " "
S of H—1 Steam loco.
S of M—Steam shovels.
PP—10 Boilers, total 1000 H. P., 7 pumps.
EMP—40. Last fiscal year output 5,000 tons.
Sales Agent, T. C. Bugg, Evansville, Ind.

OHIO & INDIANA COLLIERIES CO. (THE)
Collieries Mine; Stripping, No. 4 Seam.
PO—Clay City, Ind.; SP—Howesville, Ind.; CTY—Clay; RR—Monon.
PR—Joseph J. Jones, Oak Hill, Ohio
TR—Ira W. Aten, ... Clay City, Ind.
PA—Ira W. Aten, " "
GM—Geo. G. Rowland, Indianapolis, Ind.
GS—Geo. G. Rowland, " "
CE—Geo. G. Rowland, " "
MS—Jas. Leichty, ...Jasonville, Ind.
S of H—Steam Loco.
Sales Agent, Geo. G. Rowland, Indianapolis, Ind.
NOTE—Just commencing to operate, mostly construction work, no coal shipped.

OLD SHELBURN COAL COMPANY.
Keystone Mine, Shaft; No. 5 Seam; 5½ ft. thick.
PO—Shelburn, Ind.; SP—Same; CTY—Sullivan; RR—C. & E. I.
PR—W. D. Hunter....Shelburn, Ind.
GM—W. D. Hunter, " "
TR—W. A. Patterson, " "
PA—B. E. German, " "
SM—B. E. German. " "
MS—B. E. German....Shelburn, Ind.
EM—Rush & Everson..Terre Haute, Ind.
SCO—W. D. Hunter,, Buyer, B. E. German, Shelburn, Ind.
S of H—Mules; track gauge 42 in.
EMP—60. Last fiscal year output 45,024.23 tons.
Sales Agent, Harrisburg-Franklin Coal Company, Chicago, Ill.

OLIPHANT-WASSON COAL CO.
Oliphant No. 1 Mine; Shaft; No. 5 Seam, 60 to 96 in. thick.
PO—Bruceville, Ind.; SP—Same; CTY—Knox; RR—P. R. R., I. & V. Br.
PR—J. T. Olphiant....Vincennes, Ind.
TR—F. L. Oliphant, " "
GM—Wm. Johnson, " "
GS—Wm. Johnson, " "
PA—J. R. Henderson, " "
EM—W. E. Buss, " "
MS—Dan E. Davis....Bruceville, Ind.
S of H—1 Elec. loco.; track gauge, 42 in.
S of M—2 Elec. mach.
PP—4 Brownwell, horizontal boiler, total 600 H. P., gen. unit, 150 K. W., 250 volts D. C., 1 pump.
EMP—100.
NOTE—New operation, started to ship coal March 10, 1915.

OTTER CREEK COAL CO.
General Office, 417 S. Dearborn St., Chicago, Ill.
Mary No. 2 Mine, Shaft, No. 1 Seam, 2 ft. 4 in. to 4 ft. thick.
PO—Fontanet, Ind.; SP—Coal Bluff, Ind.; CTY—Vigo; RR—E. & C. I.
PR—J. P. Austin.....Chicago, Ill.
GM—J. P. Austin.....Chicago, Ill.
PA—J. P. Austin.....Chicago, Ill.
GS—John Chesterfield.....Brazil, Ind.
MS—Albert Parker, " "
EM—A. J. Collier....Rosedale, Ind.
MM—D. H. Collier, " "
EE—D. H. Collier, " "
S of H—Mules and Rope, track gauge 36 in.
S of M—8 Elec. mach.
PP—2 return tubular boilers, total 500 H. P., 2 gen. units, 250 volts, D. C., 1 pump.
EMP—125.

PARKE COUNTY COAL COMPANY.
Parke No. 12 Mine, Shaft; No. 3 Seam; 6 to 7½ ft. thick.
PO—Rosedale, Ind.; SP—Same; CTY—Parke; RR—Vandalia, Michigan Div
PR—Charles Minshall, Terre Haute, Ind.
TR—Otto Heyden, " "
GM—M. H. Johnson....Rosedale, Ind.
MS—Thomas Bingham, " "
PA—Jos. Entwistle, " "
EM—G. V. Stonehart, " "
MM—H. O. Cahill, " "
S of H—Mules and 2 gasoline loco.; track gauge 36 in.
S of M—Hand and 36 comp. air machs.
PP—8 Reurn tubular boilers, total 1200 H. P., 1 turbine, 250 volts, D. C.; 4 air comp.; 4 pumps.
EMP—400. Last fiscal year output 350,000 tons.

PEABODY COAL CO.
General Office, Chicago, Ill.
Reliance Mine, Shaft; No. 6 Seam; 5½ ft. thick.
PO—Shelburn, Ind.; SP—Same; CTY—Sullivan; RR—C. & E. I., Reliance Switch.
PR—F. S. Peabody.....Chicago, Ill.
TR—J. A. Adams.....Chicago, Ill.
GM—W. H. Leeland.....Chicago, Ill.
Chief Eng—M. F. Peltier..Chicago, Ill.
PA—H. E. Campbell, " "
MS—Sam. C. Watts, " "
S of H—Mules; track gauge 48 in.
S of M—11 Elec. mach.
PP—2 Return tubular boilers total 300 H. P., 250 volts D. C.
EMP—124.

PEACOCK COAL & MINING CO.
General Office, Indianapolis, Ind.
Peacock No. 2, Slope; No. 5 Seam; 8 ft. thick.
PO—Oakland City, Ind.; SP—Massey, Ind., CTY—Pike; RR—Evansville & Indianapolis.
PR—Fletcher S. Hines, Indianapolis, Ind.
TR—Samuel Ashby, " "
S of H—Mules.
S of M—4 Comp. air machs.
PP—1 Air comp.; 1 pump.
EMP—40. Last fiscal year output 30,000 tons.

PITTSBURGH MINING CO.
Sandford Nos. 1 and 2 Mines; Shafts, Nos. 4 and 6 Seams; 4½ to 6½ ft. thick.
PO—Terre Haute, Ind.; SP—Sandford, Ind.; CTY—Vigo; RR— C. C. C. & St. L.
PR—W. W. Ray....Terre Haute, Ind.
GM—W. W. Ray, " "
TR—W. L. Williamson, " "
PA—W. L. Williamson, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Boilers, total 550 H. P., 2 pumps.
EMP—500. Last fiscal year output 300,000 tons.

PRINCETON COAL COMPANY.
Princeon Mine, Shaft No. 5 Seam 5½. to 7 ½ ft. thick.
PO—Princeton, Ind.; SP—Same; CTY—Gibson RR—Southern Ry. & C. & E. I. Rys.
PR—R. J. Smith.....Terre Haute, Ind.
GM—J. G. Applegarth....Princeton, Ind.
PA—J. G. Applegarth....Princeton, Ind.
EM—Chas. Hill.....Princeton, Ind.
MS—F. Buchanan.....Princeton, Ind.
EE—Jas. Vallely.....Princeton, Ind.
S of M—8 Elec. mach.
PP—3 Water tube boilers, 450 H. P. and 1 pump. Purchase Elec. power.
EMP—250.

PYRAH COAL CO.
Pyrah Mine.
PO—Brazil, Ind.; SP—Same; CTY—Clay.
No report.

QUEEN COAL AND MINING CO.
PR—James H. Persons..Jasonville, Ind.
GM—James H. Persons, " "
TR—James S. Randolph Lafayette, Ind.
GS—E. G. Epple.....Jasonville, Ind.
PA—G. C. Rader.....Jasonville, Ind.
EM—F. A. Oxley.....Jasonville, Ind.
EE—Frank Harrison. " "
Sales Agent, James S. Randolph, Lafayette, Ind.

Queen No. 2 Mine; Shaft; No. 5 Seam. 66 to 102 in. thick.
PO—Jasonville, Ind.; SP—Latta, Ind.; CTY—Green; RR—C. T. H. & S. E.
S of H—Mules; track gauge 36 in.
S ofM— Hand.
PP—1 pump.

Queen Nos. 3 and 4; Shaft; No. 4 Seam; 3 ft. 10 in. to 5 ft. 6 in. thick.
PO—Jasonville, Ind.; SP—Latta, Ind.; CTY—Green; RR—C. T. H. & S. E.
S of H—6 elec. loco. and mules; track gauge 36 in.
S of M—11 Elec. mach. and hand.
PP—5, Atlas, Brownell and Terre Haute boilers, total 600 H. P., gen. unit 250 volts D. C. and 1 pump.
EMP—(3) idle, (4) 200. Last fisctl year output (4) 130,000 tons.

RETLAW MINES COMPANY.
See W. S. Bogle & Co.

ROWLAND BLOCK COAL & CLAY CO.
PO—Clay City, Ind.; SP—Same; CTY—Clay; RR—Monon.
Rowland No. 2 Mine; Strippings; Block Seam, 36 to 72 in. thick.
General Office, Vincennes, Ind.
PR—E. E. Eubanks.....Jackson, O.
TR—Ira W. Aten.....Clay City, Ind.
PA—Ira W. Aten, " "
GM—George G. Rowland, Indianapolis, Ind.
EM—George G. Rowland, " "
GS—J. Webster Jones, Patricksburg, Ind.
MS—Samuel G. Rowland, " "
MM—Clifford McKee, " "
S of H—2 Vulcan loco. and mules; track gauge, 36 in.
S of M—Steam shovels.
PP—5 Pumps.
EMP—79. Last fiscal year output, 98,316.10 tons.
Sales Agency, Pittsburg Coal Co. of Illinois.

SARGEANT COAL CO.
Sargeant Mine; Shaft; No. 5 Seam; 48 in. thick.
PO—Newburgh, Ind.; SP—Same; CTY—Warrick; RR—E. S. & N.. E. & E
PR—E. G. Sargeant....Newburgh, Ind.
GM—E. G. Sargeant....Newburgh, Ind
PA—E. G. Sargeant....Newburgh, Ind.
MS—E. G. Sargeant....Nawburgh, Ind
TR—M. H. Sargeant....Evansville, Ind.
CE—Arthur Absher . . Newburgh, Ind
EM—John Whittner....Newburgh, Ind.
MM—Chas. Schreckenbergh, Newburgh, Ind.
S of H—Mul.; track gauge 36 in.
S of M—Hand
PP—4 Hartman water tube boilers, total 400 H. P., and 2 pumps.
EMP—80. Last fiscal year output, 36,197 tons.
Sales Agent, E. G. Sargeant, Newburgh, Ind.

SCALES, T. D., COAL CO.
Electric Mine, Shaft; No. 5 Seam, 5 to 8 ft. thick.
PO—Boonville, Ind.; SP—Same; CTY—Warrick; RR— Southern.
PR—T. D. Scales....Boonville, Ind.
GM—T. D. Scales, " "
TR—W. E. Weyerbacher, " "
MS—Elijah Powers, " "
EM—Elijah Powers, " "
EE—Lon. Shaw, " "
S of H—Mules; track gauge 36 in.
S of M—6 Elec. mach.
PP—2 Atlas boilers total 250 H. P., 250 volts, D. C.; 3 pumps.
Sales Agent, T. D. Scales.

SCHREPFERMAN COAL CO.
No. 1 Mine; Shaft; L. Brazil Block Seam, 40 to 48 in. thick.
PO—Brazil, Ind.; SP—Same; CTY—Clay; RR—Vandalia.
GM—Nick Schrepferman, . Brazil, Ind.
MS—Bismarck Schrepferman, " "
EM—Cornelius Schrepferman, " "
S of H—Mules and tail rope; track gauge 36 in.
S of M—Hand.
PP—2 Erie return tubular boilers.
EMP—90. Last fiscal year output 15,069 tons.

SHIRKIE COAL CO.
General Office, Terre Haute, Ind.
Nos. 1 and 2 Mines; Shaft; Nos. 5 and 6 Seams, 4½ to 4 ft. 8 in. thick.
PO—Sandford, Ind. R. D. No. 1; SP—Libertyville, Ind.; CTY—Vigo; RR—C. T. H. & S. E.
PR—Hugh Shirkie..Terre Haute, Ind.
TR—Hugh Shirkie, " "
GM—Hugh Shirkie, " "
GS—Earle H. Shirkie..Sandford, Ind.
S of H—Mules; track gauge 42 in.
S of M—5 Elec. mach. and hand.
PP—8 Brownell boilers, total 1200 H. P., 2 gen. unit 600 volts, D. C.
EMP—360. Last fiscal year output (2) 400,000 tons.

SMITH, H. O., COAL CO.
Drift mine, seam 7 ft. 4 in. to 8 ft. thick.
PO—Indianapolis, Ind.; SP—Ehrmandale, Ind.; CTY—Marion.
PR—C. & E. I. Railroad, Otter Creek Dv.
S of H—Mule and rope, track gauge 36 in.
S of M—Hand.
Development new under way.
In the market for machinery and equipment.

SOULES, WM.,
Soules Mine.
PO—Terre Haute, Ind.; R. D. No. 5, SP—Same; CTY—Vigo.
No report.

STASER-EPPERSON COAL CO.
See Newburg Coal Co.

STOCKTON COAL CO.
General Office, Dugger, Ind.
PR—R. E. Price.....Dugger, Ind.
PA—R. E. Price, " "
SM—R. E. Price, " "
GS—Ebert Hammock, " "
MM—E. R. Dickey, " "
GM—Malcolm Reed.....Linton, Ind.
EM—Warren I. Butler, " "
Sales Agent, R. E. Price, Dugger, Ind.

Rose Hill Mine; Shaft; No. 6 Seam; 60 to 72 in. thick.
PO—Linton, Ind.; SP—Victoria, Ind.; CTY—Green. RR—Monon
MS—Malcolm Reed.....Linton, Ind.
S of H— Rope and mules; track gauge 36 in.
S of M—Hand.
PP—2 Atlas boilers; 1 pump.
EMP—14. New mine.

Freeman; Shaft; No. 6 Seam, 5 to 5½ ft. thick.
PO—Dugger, Ind.; SP—Same; CTY—Sullivan; RR—I. C.
MS—Ebert Hammock.....Dugger, Ind.
S of H—Rope and mules; track gauge 36 in.
S of M—Hand.
PP—2 Atlas boilers; 1 pump.
EMP40. Last fiscal year output 55,000 tons.

P. & J. Mine; Shaft; No. 4 Seam; 50 to 64 in. thick.
PO—Midland, Ind.; SP—Same, CTY—Greene; RR—C. T. H. & S. E.
MS—Frank Freund.....Midland, Ind.
S of H—Mules; track gauge 36 in.
Continued on Next Page.

Stockton Coal Co.—Cont.
S of M—2 Elec. mach.
PP—2 Jeffrey return tubular boilers and 1 pump.
EMP—25. New mine.

SUGAR VALLEY COAL CO.
General Office, Terre Haute, Ind.
Sugar Valley and Nat'onal Mines; Shaft; No. 5 Seam, 4 to 4½ ft. thick.
PO—West Terre Haute, Ind.; SP—Macksville, Ind.; CTY—Vigo; RR—Vandalia.
PR—George Epperson..Terre Haute, Ind.
GS—George Epperson, " "
TR—C. F. Thorp, " "
PA—L. L. Lehman, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—4 Boilers, total 275 H. P., 2 pumps.
EMP—120 to 210. Last fiscal year output 110,000 tons.

SUNBEAM COAL CO.
Sunbeam Mine; Shaft; Seam No. 5, 48 to 52 in. thick.
PO—Terre Haute, Ind.; SP—Macksville, Ind.; CTY—Vigo; RR—Vandalia.
PR—Henry Hafer, ...Chicago, Ill.
TR—Jas. H. McClelland, Terre Haute, Ind.
GM—Jas. H. McClelland, Terre Haute, Ind.
PA—Jas. H. McClelland, Terre Haute, Ind.
GS—Wm. Brown, Terre Haute, Ind.
S of H—2 Elec. locs. and mules; track gauge 36 in.
S of M—Hand.
PP—3 Boilers, total 300 H.P., gen. unit 275 volts D.C., 1 pump.
EMP—180.
Note—Successors to the Fauvre Coal Co.

SUNFLOWER COAL COMPANY.
Sunflower Mine, Shaft; No. 5 and 6 Seam; 60 to 84 in. thick.
PO—Dugger, Ind.; SP—Same; CTY—Sullivan; RR—I. Cent., Ind div.
PR—F. M. Dugger.....Dugger, Ind.
TR—W. R. Dugger, " "
GM—M. E. Dugger, " "
PA—M. E. Dugger,....Dugger, Ind.
GS—O. E. Dugger, " "
CE—E. H. Dugger, " "
MM—E. H. Dugger, " "
MS—T. E. Leaman, " "
EE—O. E. Meyer, " "
SM—R. E. Price, " "
S of H—2 Elec. loco.; track gauge 36 in.
S of M—11 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units, 250 volts; D. C.
EMP—275. Last fiscal year output 225,000 tons.

SUNLIGHT COAL COMPANY.
General Office, Indianapolis, Ind.
Sunlight Mine; Stripping; No. 5 Seam; 7 ft. thick.
PO—Boonville, Ind.; SP—Same; CTY—Warrick; RR—Southern.
PR—Samuel Ashby—Indianapolis, Ind.
TR—Victor C. Kendall, "
GM—John H. Blair.....Boonville, Ind.
PA—John H. Blair, " "
S of H—1 Steam loco.; track gauge 36 in.
S of M—Steam shovels.
PP—2 pumps.
Last fiscal year output 17,000 tons.

SUNNYSIDE COAL & COKE CO.
Sunnyside Mine; Shaft.
PO—Evansville, Ind.; SP—Same; CTY—Vanderburg; RR—C.& E.I.& I.C.
GM—Jas. H. Moore,.. Evansville, Ind.
PA—Jas. H. Moore, " "
EM—Carlos Wilson, " "
MS—A. Sams.....Evansville, Ind.
S of H—Mules.
S of M—Hand.
PP—2 boilers, each 100 H. P.

TECUMSEH MINING CO.
PR—W. H. Howe.....Chicago. Ill.
TR—W. J. Freeman..Terre Haute, Ind.
GM—W. J. Freeman, " "
PA—W. J. Freeman, " "
EM—Fred Rush, " "
GS—Val Martin.....Bicknell, Ind.
Sales Agency, Martin Howe Coal Co., Chicago, Ill.
Tecumseh No. 1 Mine; Shaft; No. 5 Seam, 5 to 7 ft. thick.
PO—Bicknell, Ind.; SP—Same; CTY—Knox; RR—P. R. R.
MS—Isaac Valentine....Bicknell, Ind.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—22 Comp. air Mach.
PP—6 boilers, total 750 H. P., gen. unit 250 volts D. C., 2 comp. and 1 pump.
EMP—270. Last fiscal year output 202,000 tons.
Tecumseh No. 2; Shaft; No. 5 Seam; 5 to 7 ft. thick.
PO—Bicknell, Ind.; SP—Same; CTY—Knox; RR—P. R. R.
MS—Wm. Martin, ... Bicknell, Ind.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—14 Elec. mach.
PP—6 boilers, total 750 H. P., gen. unit 250 volts D. C., 1 pump.
EMP—275. Last fiscal year output 268,000 tons.

UNITED FOURTH VEIN COAL CO.
General Office, Indianapolis, Ind.
PR—E. R. Dye.....Indianapolis, Ind.
GM—E. R. Dye, " "
TR—E. R. Dye.....Indianapolis, Ind.
GS—Clay Moss.....Linton, Ind.
PA—G. D. Yeazel....Indianapolis, Ind.
EM—Warren Butler.
MM—John Brock.....Jasonville, Ind.
EE—John Brock, " "
SCO—J. W. Wolford & Son, Buyer, George Mendenhall, Linton, Ind.
Sales Agent, E. R. Dye, Indianapolis, Ind
Black Creek Mine; Shaft; No. 4 Seam, 4 ft. thick.
PO—Linton, Ind.; SP—Same; CTY—Green; RR—C. T. H. & S. E.
MS—Nat Haggerman.....Linton, Ind.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—10 Elec. mach.
PP—3 boilers, total 325 H. P., gen. unit 250 volts D. C., 5 pumps.
EMP—250. Last fiscal year output 200,000 tons.
Antioch Mine; Shaft; No. 5 Seam; 5 ft. thick.
PO—Sullivan, Ind.; SP—Linton, Ind.; CTY—Green; RR—C.T.H.&S.E.
MS—Thos. Dodds.....Jasonville, Ind.
S of H—Mules; track gauge 40 in.
S of M—8 Elec. mach.
PP—3 boilers, total 325 H. P., gen. unit 250 volts D. C., 3 pumps.
EMP—250. Last fiscal year output 100,000 tons.
Island Valley Mine, Shaft; No. 4 Seam, 4 ft. 4 in. thick.
PO—Jasonville, Ind.; SP—Same; CTY—Clay; RR— C. T. H. & S. E.
MS—M. Clay Moss.....Linton, Ind.
S of H—1 Elec. loco.; track gauge 38 in.
S of M—8 Elec. mach.
PP—3 boilers, 325 H. P., gen. unit 250 volts, D. C., 5 pumps.
EMP—160. Last fiscal year output 125,000 tons.

VANDALIA COAL CO.
General Office, ... Terre Haute, Ind.
PR—A.M. Ogle, " " "
TR—A.M. Ogle, " " "
GM—John Hewitt, " " "
GS—H.P. Dyer, " " "
EM—H.P. Dyer, " " "
PA—F. G. Van Winkle, Terre Haute, Ind.
SCO—Linton Supply Co. Buyer, B. H. Wells, Linton, Ind.
DIST SUPTS—Wellington O'Connor, Terre Haute, Ind.; John Boyle, Linton, Ind. Sales agent, B.R. Batty, Indianapolis, Ind.
Sales Agent, B. R. Batty, Indianapolis. Ind.
Mine No. 8, Shaft, No. 4 Seam, 4½ to 5½ ft. thick.
PO—Linton, Ind. SP—Same. CTY — Greene. RR—Vandalia, Vincennes Branch.
MS—Jack Quigley, ... Linton, Ind.
S of H—4 elec. storage battery loco. and mules. Track gauge 42 in.
S of M—12 elec. mach.
PP—6 return tubular boilers, total 900 H. P., 2 gen. units 250 volts D. C. and 6 pumps.
EMP—200. Last fiscal year output 240,000 tons.
No. 9 Mine, Shaft, No. 4 Seam, 4½ to 5½ ft. thick.
PO—Linton, Ind. SP—Same. CTY — Greene. RR—Vandalia, Vincennes Branch.
MS—Chas. Dodge, ... Linton, Ind.
S of H—2 Elec. loco and mules. Track gauge 42 in.
S of M—18 elec. mach.
PP—4 water tube boilers, total 600 H. P., 2 gen. units, 250 volts D.C., and 5 pumps.
EMP—350. Last fiscal year output 360,000 tons.
No. 10 Mine, Shaft, No. 4 Seam, 5 to 5½ ft. thick.
PO—Linton, Ind. SP—Same. CTY — Greene. RR—Vandalia, Vincennes Branch.
MS—Tom Lippitt, ... Dugger, Ind.
S of H—4 elec. loco. and mules. Track gauge 42 in.
S of M—24 elec. mach.
PP—5 return tubular boilers, total 750 H.P., 2 gen units 250 volts D.C. and 3 pumps.
EMP—300. Last fiscal year, output 388,000 tons.
No. 20 Mine, Shaft, No. 5 Seam, 5 to 7 ft. thick.
PO—Linton, Ind. SP—Same. CTY — Greene. RR—Vandalia, Vincennes Branch.
MS—Andy Miller, ... Linton, Ind.
S of H—2 elec. loco. and mules.
S of M—12 elec. Mach.
PP—4 return tubular boilers, total 600 H.P., 2 gen. units 250 volts D. C., 2 pumps.
EMP—350. Last fiscal year output 432,000 tons.
No. 21 Mine, Shaft, No. 5 Seam, 5 to 7 ft. thick.
PO—Linton, Ind. SP—Same. CTY — Greene. RR—Vandalia, Vincennes Branch.
MS—Harry Harvey, ... Linton, Ind.
S of H—1 elec. loco. and mules. Track gauge 42 in.
S of M—12 elec. mach.
PP—3 return tubular boilers, total 450 H.P., 2 gen. units 250 volts D. C., 4 pumps.
EMP—150. Last fiscal year output 168,000 tons.
No. 69 Mine, Shaft, No. 3 Seam, 4½ to 7 ft. thick.
PO—Seelyville, Ind. SP—Same. CTY—Vigo. RR—Vandalia, Main Line.
MS—Jim Burt, ... Seelyville, Ind.
S of H—3 elec. loco. and mules. Track gauge 38 in.
S of M—Hand.
PP—4 return tubular boilers, total 600 H.P., 2 gen. units, 250 volts D. C., 3 phase and 60 cycles A.C., 8 pumps. Also purchase power.
EMP—400. Last fiscal year output 384,000 tons.
No. 82 Mine; Shaft; No. 5 Seam, 4 to 5 ft. thick.
PO—Terre Haute, Ind. SP—Maxville, Ind. CTY—Greene. RR—Vandalia, Main Line.
MS—Jim Baxter, ... Terre Haute, Ind.
S of M—Hand. Will install elec. later.
S of H—Mules. Will install elec. later.
PP—2 return tubular boilers, total 300 H.P.. Will purchase power. Mine being developed and will produce 3,000 tons per day.

WARRICK COAL MINING CO.
General Office, Chicago, Ill.
Polk Patch Nos. 5 and 7 Mines, Stripping.
No. 5 Seam, 5½ to 8 ft. thick.
PO—Boonville, Ind. SP—Same and DeGonia, Ind. CTY—Warrick. RR—Sou., L.C.L. and C.L. Brs.
PR—J.E. Hitt, ... Chicago, Ill.
TR—J.E. Hitt. " "
MS—Chas. Gottschalk..Booneville, Ind.
S of H—2 gasoline loco. Track gauge 42 in.
S of M—Comp. air mach. and steam shovels.
PP—4 Brownell Water Tube Boilers.
EMP—40.

WARRICK COUNTY COAL CO.
Henry Korff Mine, Shaft, No. 12 Seam, 6 to 7 ft. thick.
PO—808 Upper 8th St., Evansville, Ind. SP—Korff's, Ind. CTY—Warrick, RR—E. S. N. and Sou.
PR—Henry Korff, Sr., " "
GM—Walter B. Korff.
MS—Walter B. Korff, " "
PA—Walter B. Korff, " "
CE—Onis Rudoulph.....Boonville, Ind.
S of H—1 Comp. air loco.; track gauge 36 in.
S of M—6 comp. air machines.
PP—2 boilers, total 240 H.P., 1 air comp. 4 pumps.
EMP—100. Output 400 tons daily.

WASHINGTON-WHEATLAND COAL CO.
Shaft Mine; No. 5 Seam; 48 to 84 in. thick.
PO—Wheatland, Ind. SP—Same. CTY—Knox RR—B. & O. S. W.
PR—A.E. Nicholson, Wheatland, Ind.
TR—A.C. Nicholson, " "
GM—Thos. Harris, "
PA—Thos. Harris, " "
GS—Thos. Harris.....Wheatland, Ind.
S of H—Mules and Rope.
S of M—Hand.
PP—3 Boilers, total 180 H. P., and 1 pump.
EMP—150.

WEST CLINTON COAL COMPANY.
General Office, Terre Haute, Ind.
West Clinton No. 1 Mine, Shaft, No. 5 Seam, 4 ft. 8 in. to 5 ft. 2 in. thick.
PO—Clinton, Ind.; SP—Blanford, Ind; CTY—Vermillion, RR—C. T. H. & S. E.
PR—John Shirkie,.. Terre Haute, Ind.
GM—Steward Shirkie, " "
PA—Stewart Shirkie, Terre Haute, Ind.
EM—Henry Henneman, Terre Haute, Ind.
S of H—2 elec. loco. Track gauge 42
S of M—Hand.
PP—2 Brownell water tube boilers, 250 volts D C

WEST SIDE COAL CO.
West Side No. 1 Mine; Shaft; Seam 37 to 48 in. thick.
PO—Brazil, Ind.; CTY—Clay; RR—Vandalia.
PR—Chas. H. Zeller, ...Brazil, Ind.
GM—Chas. H. Zeller, " "
PA—Benj. Schrepferman, " "
MS—Benj. Schrepferman, " "
CE—George Shechan, " "
S of H—Mules.
S of M—Hand.
PP—1 Pump.
EMP—50. Last fiscal year output 20,000 tons.
Sales Agency, Chas. H. Zeller, Brazil, Ind.

WESTERN INDIANA MINING COMPANY.
PO—Terre Haute, Ind. SP—Same.CTY—Vigo. No report.

WIZARD COAL CO.
Wizard No. 2, Shaft, No. 5 Seam.
PO—Terre Haute, Ind. SP—Macksville, Ind. CTY—Vigo. RR—Vandalia.
PR—W.C. Hall, Sr., .. Brazil, Ind.
TR—W. Paul Zimmerman, Terre Haute, Ind.
PA—W. Paul Zimmerman, Terre Haute,
GS—W.G. Spears, W. Terre Haute, Ind.
EM—W.G. Spears. " " "
S of H—Mules and Elec. loco., track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers total 400 H. P.; gen. unit 250 volts, D. C.
EMP—200. Selling agency, Hall-Zimmerman Coal Co., Terre Haute, Ind.

WOOLEY, J. COAL CO.
General Office, Evansville, Ind.
PR—J. Wooley, ... Evansville, Ind.
TR—J. Wooley, " "
GM—J. Wooley, " "
PA—H.W. Matters, " "
VP—H.W. Matters, " "
SM—H.W. Matters, " "
CE—John A. Garcia, .. Chicago, Ill.
EM—Chas. Gottschalk, " "
Sales agent, H. W. Matters, Evansville, Ind.
Polk Nos. 5 and 7, Shaft, No. 5 Seam, 5 to 9 ft. thick.
PO—Boonville, Ind. SP—Same. CTY—Warrick. RR—Sou., Evansville Branch.
S of H—2 gasoline loco. and mules. Track gauge 42 in.
S of M—15 comp. air mach.
PP—4 Brownell water tube boilers, total 600 H.P., 3 compressors and 6 pumps.
EMP—240.
Castle Garden No. 6, Shaft.
PO—Chandler, Ind. SP—Same. CTY—Warrick. RR—Southern, Evansville Branch.
MS—John W. Miller, ..Chandler, Ind.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—2 water tube boilers, total 100 H.P., 3 pumps. Closed at present, March 1st.
Paxton No. 8, Shaft, No. 5 Seam, 5 to 7½ ft. thick.
PO—Paxton, Ind. SP—Same. CTY — Sullivan. RR—C. & E. I.
MS—J. D. McInness.....Paxton, Ind
S of H—4 elec. loco.
S of M—6 elec. mach.
PP—4 Brownell water tube boilers, 600 H.P., 1 gen. unit, 150 K.W., 250 volts, D.C. Output for last six months, 6,000 tons. New mine.

WORSHAM-NEWBURG COAL CO.
Sold to Sargeant Coal Co.

WYOMING COAL COMPANY.
Mine No. 1, Shaft, 235 ft. deep, No. 5 Seam, 5½ ft. to 6 ft. thick.
PO—Francisco, Ind. SP—Same. CTY—Gibson. RR—Southern Ry.
PR—Levi Bird, ... Norway, Mich.
TR—Ella C. Bird, .. Francisco, Ind.
GM—Jas. C. Anderson, " "
MS—Jas. C. Anderson, " "
PA—Jas. C. Anderson, " "
CE—Onis Rudolph, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—One boiler, total 250 H.P., two pumps.
EMP—45. Last fiscal year output 32,800 tons. Sales agent, Ella C. Bird, Francisco, Ind.

ZELLER-McCLELLAN & COMPANY.
Mine No. 6, Shaft, Lower Seam, Brazil Block, 2 ft. 8 in. to 3 ft. 8 in. thick.
PO—Brazil, Ind.; SP— Same CTY—Clay. RR—Central Ind.
PR—W.M. Zeller, ... Brazil, Ind.
GM—W.M. Zeller, " "
PA—W.M. Zeller, " "
TR—C.M. Zeller, " "
MS—Ike Hansel, ... Carbon, "
S of H—Mules; track gauge 36 in.
S of M—electric machines.
EMP—110. Last fiscal year output 80,000 tons.

IOWA

For List of Abbreviations See Page 498.

ACKEN COAL CO.
Nos 1 and 2 Mines
PO—Mystic, Ia. SP—Same. CTY—Appanoose.
MS—Wm. Porter. State report.

ALBIA COAL CO.
Albia Mine No. 1, Shaft, Seam 6 to 7 ft. thick.
PO—Albia, Ia. SP—Same. CTY—Monroe. RR—M.&St. L.
PR—H. H. Harris.....Ottumwa, Ia.
TR—H.H. Harris, " "
GM—H.H. Harris, " "
PA—H.H. Harris, " "
SM—H.H. Harris, " "
MS—B. A. Harris .....Albia, Ia.
S of H—Rope and mules. Track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 450 H.P.
EMP—175. Last fiscal year output 100,000 tons. Sales agent, H. H. Harris, Albia, Ia.

ALPINE COAL CO.
(Subsidiary to Fowler & Wilson Coal Co.)
General Office, 110 S. Market St., Ottumwa, Ia.
PR—E. D. Fowler.....Ottumwa, Ia.
VP—I. W. Fowler, " "
TR—W. T. Wilson, " "
GS—D. F. Cushing, " "

AMERICAN COAL CO.
See Blount Evans Coal Co.

ANCHOR COAL CO.
General Office, Ottumwa, Ia.
PR—W.R. Daum, ... Ottumwa, Ia.
TR—W.H. Ferguson, " "
GM—W.H. Ferguson, " "
PA—W.H. Ferguson, " "
SCO—Laddsdale Supply Co. Buyer, W. H. Ferguson, Ottumwa, Ia.

Anchor No. 2 Mine, shaft, Seam 32 in. thick.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. RR—C.R.I.&P.
MS—John Morris, .. Centerville, Ia.
S of H—Mules. Track gauge 34 in.
S of M—Hand.
PP—2 boilers, total 200 H.P., 1 pump.
EMP—200.

Laddsdale No. 2 Mine, Slope, Seam 32 in. thick.
PO—Laddsdale, Ia. SP—Eldon, Ia. CTY—Davis. RR—C.R.I.&P.
MS—W. B. Williams, Laddsdale, Ia.
SM—Glen Wilson, " "
S of H—1 elec. loco. Track gauge 36 in.
S of M—1 elec. machine.
PP—2 boilers, total 160 H.P., 1 generating unit, 250 volts, D.C., 1 pump.
EMP—40.

ANDERSON COAL CO.
PO—Des Moines, Ia. CTY—Marion.
MS—John Evans, Des Moines, Ia., and Andersonville, Ia. State report.

ARMSTRONG COAL COMPANY.
Mine No. 1, Shaft, Seam 30 to 36 in. thick.
PO—Cincinnati, Ia. SP—Same. CTY—Appanoose. RR—C.B.&Q., C.B.& K. C.
TR—E. R. Ducky....Kansas City, Mo.
PR—W. D. Ketcham....Mendota, Mo.
GM—W.D. Ketcham, " "
GS—W.D. Ketcham, " "
PA—W. D. Ketcham, Mendota Mo.
MS—Chas. H. Harrison, Cincinnati, Ia.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 200 H.P.
EMP—100 Sales Agent, Star Coal Co., Kansas City, Mo.

ATWOOD COAL CO.
General Office, What Cheer, Ia.
Blyth Mine. Slope, Seam 4 to 7 ft. thick.
PO—Rose Hill, Ia. SP—Oskaloosa, Ia. CTY—Mohaska. RR—C.R.I.&P.
PR—Alex Walker, .. What Cheer, Ia.
TR—J..L. Mitchell, " " "
PA—Robt. Schott, " " "
MS—J.R. Boland, .. Rose Hill, "
SCO—Blyth Supply Co., " " "
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand.
PP—3 water tube boilers, 3 pumps.
EMP—125. Last fiscal year output 43,309 tons. Sales Agent Robt. Schott, What Cheer, Ia.

BARRETT COAL CO.
Barrett Mine, Slope, Seam 30 in. thick.
PO—Mystic, Ia. SP—Same. CTY—Appanoose. RR—C. M. & St. P.
PR—Jas. Barrett, ... Mystic, Ia.
GM—Jas. Barrett, " "
MS—Jas. Barrett, " "
PA—J.J. Barrett, " "
S of H—Elec. loco.; track gauge 30 in.
S of M—Hand.
EMP—40. Last fiscal year output 15,000 tons. Sales Agent J. J. Barrett, Mystic, Ia.

BECK COAL & MINING CO.
Shaft Mine Seam 3 to 4 ft. thick.
PO—DesMoines, Ia.; CTY—Polk; RR—C. R. I. & P.
PR—Thomas Beck.....Des Moines, Ia.
GM—Thomas Beck, " "
TR—D. P. Reinking, " "
MS—John T. Beck, " "
MM—Bert Aulhonan, " "
EE—Dave Clelland, " "
S of H—Mules.
S of M—3 Elec. mach.

BEGGS COAL CO.
No. 7 Mine, Shaft, Seam 30 in thick.
PO—Mystic, Ia. SP—Same. CTY—Appanoose. RR—C.M.&St. P.
PR—W.M. Beggs, ... Mystic, Ia.
S of H—Mules, 1 gasoline loco. Track gauge 31 in.
S of M—Hand.
PP—1 pump.
EMP—8. Last fiscal year output 1,600 tons.

BIDWELL COAL CO.
Shaft Mine, No. 5 Seam; 48 to 72 in. thick.
PO—Bidwell, Ia.; SP—Same CTY—Wapello; RR—C. M. & St. P., K. C. Div.
PR—John Ramsay.....Oskaloosa, Ia.
TR—Homer H. Harris....Ottumwa, Ia.
GM—Homer H. Harris, " "
PA—Homer H. Harris, " "
GS—W. T. Ramsey.....Bidwell, Ia.
CE—C. Pabst, " "
EE—C. Pabst, " "
MM—Royal Lovell, " "
EM—W. T. Ramsey, " "
SM—Gantz Kellogg, " "
S of H—Mules; track gauge 36 in.
S. of M—Hand.
PP—2 Return tubular boilers, total 300 H. P.
EMP—250. Last fiscal year output 150,000 tons.

BIG BLOCK COAL CO.
No. 10 Mine; Slope; Centerville Seam, 36 to 48 in. thick.
PO—Coal City, Ia.; SP—Same; CTY—Appanoose; RR—I. & St. L.
PR—Louis Venzon.....Coal City, Ia.
SM—Louis Venzon, " "
GM—B. Bellegante, " "
GS—B. Bellegante, " "
MS—B. Bellegante, " "
S of H—Mules and rope.
S of M—Hand.
PP—Boiler, 100 H. P.
EMP—80. Last fiscal year output, 120,000 tons.
Sales Agent, E. M. Sprecher, Maulton, Ia., successors to the Coal City Coal Co.

BIG JO BLOCK COAL CO.
Discontinued operations April 30, 1913.

BLOOMFIELD COAL & MINING CO.
Bloomfield Mine, No. 4, Shaft, 3½ to 5 ft. thick.
PO—Des Moines, Ia. SP—Taylor, Ia. CTY—Polk. RR—C. & N.W. Ry.
PR—Geo. Yarn, ... Des Moines, Ia.
MS—Geo. Yarn, " "
TR—A. F. Carlson.....Des Moines, Ia.
GM—Chas. S. Worth, " "
PA—Chas. S. Worth, " "
S of H—1 Gasoline loco. and mules; track gauge 34 in.
S of M—Elec. mach. and hand.
PP—Purchase power.
EMP—150. Last fiscal year output 114,090 tons.

BLOUNT-EVANS COAL CO.
Blount-Evans No. 1 Mine; Shaft; No. 3 Seam, 36 to 60 in. thick.
PO—Des Moines, Ia.; SP—Broadmoor, Ia.; CTY— Polk; RR —Inter-Urban, Urbandale Br.
PR—I. Evans.....Des Moines, Ia.
GM—I. Evans, " "
MS—I. Evans, " "
TR—S. H. Blount, " "
PA—J. H. Duro, " "
S of H—Mules; track gauge 32 in.
S of M—5 Comp. air mach. and hand.
PP—2 Return tubular boilers, total 200 H. P., 1 pump.
EMP—150. Last fiscal year output 60,000 tons.
Sales Agent, J. H. Duro, Des Moines, Ia.

BOLTON HOOVER COAL CO.
Bolton Mine, No. 3, Slope, Beacon Seam 54 to 90 in. thick.
PO—Oskaloosa, Ia., R.F.D. No. 5. SP—Bolton, Ia. CTY—Mahaska. RR—C.B.&Q., Oskaloosa-Tracey Branch.
PR—F.N. Smith, ...Burlington, Ia.
TR—W.W. Branigar, Oskaloosa. "
GM—W.W. Branigar, " "
PA—W.W. Branigar, " "
MS—J.W. Canty, R.F.D. 5 " "
EM—J. W. Canty, " "
SCO—Bolton Supply Co. Buyer, A. E. Childs, Oskaloosa, Ia.
S of H—Mules and rope. Track gauge 36 in.
S of M—2 Elec. mach. and hand.
PP—2 Return tubular boilers, 3 pumps; power purchased.
EMP—142. Last fiscal year output 84,612 tons. Sales Agent W. W. Branigar, Oskaloosa, Ia.

BOONE BLOCK COAL CO.
Boone Mine, Shaft, Seam 3 to 4½ ft. thick.
PO—Boone, Ia. SP—Same. CTY—Boone. RR—C.&N.W.C.M.&St.P. and the Ft. D.D.M.&So.
PR—Geo. Heaps, Sr., ... Boone, Ia.
GM—Geo. Heaps, Sr., " "
TR—Robt. Kennedy, ... Ogden, "
GS—Wm. Benson, ... Boone, "
S of H—Mules. Track gauge 2 ft. 8 in.
S of M—Hand.
PP—3 water tube boilers, total 300 H. P., 1 pump.
EMP—130. Last fiscal year output 37.000 tons.

CARBON BLOCK COAL CO.
No. 30 Mine, Shaft, Seam 28 to 36 in. thick.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. RR—C.R.I.&P.
PR—A.D. Crawford, ..Centerville, Ia.
GM—A.D. Crawford, " "
MS—John Atkinson, Jr., " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 120 H.P.
EMP—250. Last fiscal year output 100,000 tons.

CENTER COAL CO.
Center No. 1 Mine, Shaft, First Seam, 28 to 34 in. thick.
PO—Centerville, Ia. SP—Same. CTY Appanoose. RR—C.B.&Q., C.R.I. &P.
PR—John Peterson, . Centerville, Ia.
TR—Louis Anderson....Centerville, Ia.
GM—Louis Anderson, " "
PA—Louis Anderson, " "
MF—John Sirven, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 Ottumwa boilers, total 120 H. P.
EMP—120. Last fiscal year output 46,727 tons.

CENTERVILLE BLOCK COAL CO.
General Office, Centerville, Ia.
PR—C.W. Lane, ... Centerville, Ia.
TR—W.W. Oliver, " "
GM—W.W. Oliver, " "
Secy—W. W. Oliver....Centerville, Ia.
GS—Alex Dargavell, " "
PA—Alex Dargavell, " "
EM—W.C. Wyman, " "
MM—John D. Miller, " "
Sales Mgr—W. W. Oliver, " "

No. 1 Mine; Shaft; First Seam 32 to 36 in. thick.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. RR—C.R.I.&P.
MS—Wm. Bitner, ...Centerville, Ia.
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand.
PP—3 return tubular boilers, total 325 H.P., 1 Norwalk compressor, 2 pumps.
EMP—96. Last fiscal year output 29,967 tons.

No. 2 Mine, Shaft, Low Coal Field Seam, 28 to 32 in. thick.
PO—Numa, Ia. SP—Same. CTY—Appanoose. RR—C.R.I.&P.
MS—Wm. Allen, ... Numa, Ia.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, total 60 H.P., 1 pump.
EMP—75. Last fiscal year output 23,688 tons.

No. 10 Mine; Shaft, Low Coal Field Seam, 36 in. thick.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. RR—C.R.I.&P. ..
MS—Robt. Easton.....Centerville, Ia.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 boilers total 170 H. P., 2 pumps.
EMP—130. Last fiscal year output 45,926 tons.

No. 9 Mine; Shaft, Low Coal Field Seam, 32 to 34 in. thick.
PO—Centerville, Ia. SP—Same. CTY Appanoose; RR—Cent. & Albia. Traction connecting with M.&St. L. at Albia, Ia.
S of H—Mules. Track gauge 38 in.
S of M—Hand
PP—3 boilers, total 240 H.P., 1 Norwalk air compressor. Mine shut down April 1st, 1912, not running for the past three years.

No. 3 Mine, Relay, Shaft, "Centerville" or "Mystic Low Coal Field" Seam 30 to 36 in. thick.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. RR—C.B.&Q.
MS—John Mockey.....Centerville, Ia.
S of H—Mules and rope. Track gauge 38 in.
S of M—4 Comp. air mach. and hand.
PP—3 Boilers, total 370 H. P. 1 air compressor, 2 pumps.
EMP—80. Last fiscal year output 25,000 tons.

No. 5 Mine, Slope, Low Coal Field First Seam, 30 in. thick.
PO—Brazil, Ia. SP—Same. CTY—Appanoose. RR—C.B.&Q.
MS—Jas. Hunter, ... Mystic, Ia.
S of H—Rope and mules; track gauge 38 in.
S of M—Hand, Long Wall System.
PP—2 boilers, total 120 H.P., 1 pump.
EMP—90. Last fiscal year output 40,282 tons.

CENTRAL COAL CO.
Lockman Nos. 2, 3 and 5 Mines; Slope; Seam 42 to 60 in. thick.
PO—Lockman, Ia. SP—Same and Hickory, Ia.; CTY—Monroe; RR—M. &St. L.
PR—S.H. Evans, ... Lockman, Ia.
TR—T.L. Evans, " "
GM—T.L. Evans, " "
PA—T.L. Evans, " "
GS—T. L. Evans.....Lockman, Ia.
MS—J. D. Clark, " "

Continued on Next Page.

Central Coal Co.—Cont.
SCO—Lockman Supply Co., Buyer, R. G. Harris, Lockman, Ia.
S of H—Mules and wire rope. Track gauge 36 in.
S of M—Hand.
PP—4 Murray Iron Works boilers.
EMP—250. Worked less than half time last year, output 59,186 tons.

CENTRAL IOWA FUEL CO.
Inland and Olmitz Mines; Shaft; Seam 72 in. thick.
PO—Chariton, Ia.; SP—Same; CTY—Lucas; RR—C. R. I. & P., Kansas City Branch.
PR—A. E. Hollingsmith, Des Moines, Ia.
VP—J. Norwood, " "
GM—J. Norwood, " "
TR—F. C. MacMillan, " "
S of H—2 Gasoline loco.
S of M—Hand.

CITIZENS COAL CO.
Shaft Mine; Seam 28 in. thick.
PO—Centerville, Ia.; SP—Same; CTY—Appanoose; RR—Sou. Ia. Inter Elec.
PR—D. A. Lee, ...Centerville, Ia.
TR—D. A. Lee, " "
GM—D. A. Lee, " "
PA—D. A. Lee, " "
GS—Harry Parker, " "
S of H—Mules.
S of M—1 Elec. mach.
PP—Gen. unit 220 volts A. C., 3 phase, 60 cycles.
NOTE—Reorganized June 1914. Output 8,000 tons.

COAL CITY COAL COMPANY.
See Big Block Coal Co.

COALFIELD FUEL COMPANY.
Granger No. 1 and 2, Slope, Seam 3 ft. 4 in. thick.
PO—Coalfield, Ia. SP—Same. CTY—Monroe. RR—M. &St.L.
PR—G.L. Brogan, ... Albia, Ia.
TR—A.E. Billmon, " "
GM—C.N. Bloomfield,.. Coalfield, Ia.
PA—C.N. Bloomfield, " "
MS—W.P. Jamison, " "
CE—W.L. Woodard, " "
EM—W.L. Woodard, " "
SCO—Coalfield Supply Co. " "
S of H—Rope. Track gauge 33 in.
S of M—Hand.
PP—1 return tubular boiler, total 125 H.P.
EMP—75. Last fiscal year output 30,000 tons. Sales agent, C. M. Bloomfield, Coalfield, Ia.

COLFAX CONSOLIDATED COAL CO.
Mines Nos. 8 and 9, Shafts, Seam 2½ to 6 ft. thick.
PO—Colfax, Ia. SP—Same. CTY—Jasper. RR—C.R.I.&P., C.N., C. G.W.,I.V.
PR—W. A. Servers.....Des Moines, Ia.
TR—J.B. Ryan .....Colfax, Ia.
GM—J.B. Ryan, " "
PA—Theo. H. Gould, " "
MS—John Pearson.....Colfax, Ia.
SM—H.A. Noble, " "
EE—B. Winterstein, " "
S of H—Mules and 4 Elec. loco.
S of M—3 Elec. mach. and hand.
PP—5 Water tube boilers, 2 pumps.
EMP—300.

CONSOLIDATED INDIANA COAL CO.
General Office, Van Buren St., Chicago, Ill.
1 mine in Iowa, 6 mines in Indiana.
Electra Mine; Shaft; Electra Seam 36 to 54 in. thick.
PO—Melcher, Ia. SP—Same. CTY—Marion. RR—C.R.I.&P.
PR—H. U. Mudge.....Chicago, Ill.
TR—G.H. Crosby, " "
GM—Carl Scholz, " "
PA—H.S. Mikesell, " "
MS—Harry Evans.....Melcher, Ia.
S of H—2 elec. loco. and hand.
S of M—2 elec. mach.
PP—2 Oil City return tubular boilers, total 500 H.P., gen. unit. A.C., 1 pump.
Last fiscal year output 18,897 tons.

CONSOLIDATION COAL CO.
Nos. 16 and 18 Mines; Shaft; Seam 48 to 86 in. thick.
PO—Buxton, Ia.; SP—Same; CTY—Monroe; RR—C. & N. W., I. and M. Div.
PR—W. A. Gardner, ...Chicago, Ill.
TR—A. B. Jones, " "
PA—L. S. Carroll, " "
MM—A. A. Davis, " "
GS—John P. Reese, ...Gillespie, Ill.
EM—F. F. Jorgensen, " "
CE—W. E. Dunham, ..Winona, Minn.
MS—Wm. McLaughlin and Ed. Bucknell, Buxton, Ia.
EE—Arthur Davis, ...Buxton, Ia.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—8 Water tube boilers, total 1,000 H.P., 2 gen. units 250 volts D.C., 1 pump.

CONSUMERS COAL CO.
Sold to the Harkes Coal Co.

CRAIG & DAWSON COAL CO.
General Office, Fort Dodge, Ia.
PR—J.L. Craig, .. Fort Dodge, Ia.
GM—J.L. Craig, " "
PA—J.L. Craig, " "
TR—T.H. Dawson, " "
EM—Thos. Hay, ...Otho, Ia.
EE—H. Dawson.....Otho, Ia.

Otho No. 1 Mine, Shaft, Second Seam, 3 to 5 ft. thick.
PO—Otho, Ia. SP—Same. CTY—Webster. RR—M.&St. L.
MS—E. Peart.....Otho, Ia.
S of H—Mules. Track gauge, 32 in.
S of M—Hand.
PP—1 water tube boiler, total 80 H. P., 2 pumps.
EMP—25. Last fiscal year output 8,700 tons.

Cannel No. 3 Mine, "Cannel" Lower Seam, 30 to 36 in. thick.
PO—Kalo, Ia. SP—Same. CTY—Webster. RR—M.&St. L.
MS—Wm. Dawson.....Otho, Ia.
S of H—Mules and Elec. loco.; track gauge 32 in.
S of M—Hand.
PP—4 gen. units, 440 volts A. C., 3 phase 25 cycles; Power purchased.
EMP—25. Last fiscal year output 9,000 tons.

CRESCENT COAL CO.
General Office, Oskaloosa, Ia.
PR—S. W. White.....Oskaloosa, Ia.
GM—S.W. White, ... Oskaloosa, Ia.
PA—S.W. White, " "
TR—J. E. Hatfield.....Oskaloosa, Ia.
GS—C. W. Durfee.....Whiteburg, Ia.
EM—H. D. MacLean....Whiteburg, Ia.
SCO—Crescent Supply Co..Whiteburg, Ia.

Mine No. 7, Shaft, Seam 4 to 6 ft. thick.
PO—Whiteburg, Ia.; SP—Buxton, Ia.; CTY—Monroe; RR—C. & N. W., I. & M. Div.
MS—Wm. Ross.....Whiteburgh, Ia.
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, 200 H. P.
EMP—300. Last fiscal year output, 162,460 tons.

CRICKET COAL CO.
Out of business.

CROATIAN COAL CO.
Croatian Mine, Shaft, No. 3 Seam, 4 ft. 8 in. thick.
PO—Albia, Ia. SP—Same. CTY—Monroe. RR—C.B.&Q.
PR—G.J. Starcevic, ... Albia, Ia.
GM—W.J. Richardson, " "
GS—W.J. Richardson, " "
PA—W.J. Richardson, " "
EM—W.J. Richardson, " "
S of H—Mules. Track gauge 3 ft. 4 in.
S of M—Hand.
EMP—40. Sales agent, W. J. Richardson, Albia, Ia.

DALLAS COAL CO.
General Office, Crocker Bldg., Des Moines, Ia.
Shaft Mine; Seam 58 in. thick.
PO—Granger, Ia.; SP—Same; CTY—Dallas; RR—C. M. & St. P., Madrid Branch.
PR—A. W. Carlson, Des Moines, Ia.
GM—A. W. Carlson, " "
PA—A. W. Carlson, " "
MS—John Lindbloom, " "
FM—L. L. Leibrock, " "
EE—W. J. Peterson, ...Madrid, Ia.
S of H—Mules (at present); track gauge 42 in.
PP—Power purchased.
Sales Agent, A. W. Carlson, Des Moines, Ia.

DAWSON COAL CO.
Dawson No. 2, Shaft, "Lower" Seam.
PO—Dawson, Ia. SP—Same. CTY—Dallas. RR—C. M. & St. P.
GM—T. C. Thorpe.....Dawson, Ia.
PA—T.C. Thorpe, " "
MS—R.R. Thorpe, " "
EM—R. R. Thorpe, " "
S of H—Mules.
S of M—Comp. air mach.
PP—2 boilers, total 300 H.P.

DEEP VEIN COAL CO.
No. 4 Mine; Shaft; Seam, 54 to 60 in. thick.
PO—Fraser, Ia.; SP—Same; CTY—Boone; RR—F. D. & D. S.
PR—John Reed.....Fraser, Ia.
TR—Chas. H. Henle.....Fraser, Ia.
GM—Chas. H. Henle, " "
PA—Chas. H. Henle, " "
MS—Peter Weber, " "
MM—L. Shaffer, " "
SCO—Fraser Mercantile Co., Fraser, Ia.
S of H—Mules.
S of H—Hand.
PP—4 Return tubular boilers, gen unit.
Last fiscal year output 24,000 tons.
Sales manager, Chas. H. Henle, Fraser, Ia., formerly Mine No. 4 of Ogden Con. Coal Co.

DES MOINES COAL CO.
Iowa Mine, Shaft, Seam 5 ft. thick.
PO—Des Moines, Ia. SP—Same. CTY—Polk. RR—C. G. W.
PR—J.S. Henderson,. Oskaloosa, Ia.
TR—S.T. Slade, .. Des Moines, Ia.
GM—J. Norwood.....Des Moines, Ia.
PA—J. Norwood.....Des Moines, Ia.
MS—C. Anderson, " "
EM—C. Anderson, " "
S of H—Mules. Track gauge 2 ft. 8 in.
S of M—Hand.

DIAMOND BLOCK COAL CO.
No. 22 Mine.
PO—Mystic, Ia.; SP—Same; CTY—Appanoose; RR—C. M. & St. P.
PA—Lodwick Bros. Coal Co..Mystic, Ia.
Sales Agency, Lodwick Bros. Coal Co., Mystic, Ia.

DOMESTIC COAL CO.
PO—Cincinnati, Ia. SP—Same. CTY—Appanoose.
MS—Walter Hall, ...Cincinnati, Ia.
State report.

EAGLE COAL CO.
General Office, Des Moines, Ia.
PR—D.E. Sayre, ... Des Moines, Ia.
TR—H.A. Sayre, " "
GM—E.A. Sayre, " "
GS—E.A. Sayre, " "

Eagle No. 2 Mine, Shaft, No. 3 Seam, 3 to 7 ft. thick.
PO—Des Moines, Ia. CTY—Polk.
MS—I. Hector, ... Des Moines, Ia.
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—2 water tube boilers, total 160 H. P.,/1 pump.
EMP—65.

Eagle No. 3 Mine, Shaft, No. 3 Seam, 3 to 4 ft. 8 in. thick.
PO—Des Moines, Ia. CTY—Polk.
MS—Frank Burris, .. Des Moines, Ia.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 water tube boilers, total 160 H. P., 2 pumps.
EMP—85.

ECONOMY COAL CO.
Economy Mine, Shaft, 3rd Seam, 5 in. to 3 ft. 4 in.
PO—Des Moines, Ia.; SP—Same; CTY—Polk; RR—C. R. I. & P.
PR—Geo. H. Ramsey....Knoxville, Ia.
TR—P. Reynolds.....Des Moines, Ia.
GM—J. H. Ramsay, " "
GS—J. H. Ramsay, " "
PA—J. H. Ramsay, " "
MM—John Moses, " "
EE—John Moses, " "
S of H—Rope and mules; track gauge 3 ft.
S of M—Hand, 2 Elec. machines.
PP—Water tube boilers, total 445 H. P., 1 comp. 6 pumps.
EMP—150.

EGYPT COAL CO.
Egypt Mine, Slope, Central Seam 30 in. thick.
PO—Mystic, Ia.; SP—Same; CTY—Appanoose; RR—C. M. & St. P.
PR—A. V. Venell.....Mystic, Ia.
TR—A. B. Dudley, " "
MS—R. Venell, " "
S of H—Rope; track gauge 30 in.
S of M—3 Elec. mach.
PP—Purchase power, alternating current
EMP—90. Last fiscal year output 27,000 tons.
Sales Agent, A. B. Dudley, Mystic, Ia.

ELECTRIC COAL CO.
No. 7 Mine.
PO—Mystic, Ia.; CTY— Appanoose.
No report.

EMPIRE MINING CO.
New Mammoth Vein Coal Co.

ENGLISH CREEK COAL COMPANY.
Mine No. 3, Shaft, Seam 4 to 7 ft. thick.
PO Knoxville, Ia. SP—Same. CTY—Marion. RR—C.R.I.&P.
PR—Geo. H. Ramsay, .. Knoxville, Ia.
TR—H. S. Howard, .. Oskaloosa, "
GM—J. H. Ramsay, Des Moines, "
MS—Ed. Rowley, ... Knoxville, "
PA—R. W. Varley, " "
MM—Chas. Fisher, " "
SCO—English Creek Supply Co. Buyer, Geo. W. Miser, Knoxville, Ia.
S of H—Rope. Track gauge 3 ft.
S of M—Hand.
PP—3 boilers, total 350 H. P., 2 pumps.
EMP—250. Last fiscal year output 86,175 tons.

ENTERPRISE COAL MNG. CO.
General Office, Des Moines, Ia.
Enterprise Nos. 1 and 2, Shaft, Seam 3½ to 5 ft. thick.
PO—Enterprise, Ia. SP—Same. CTY—Polk. RR—C.R.I.&P., Short Line.
PR—H.F. Garver, .. Des Moines, Ia.
TR—H.F. Garver, " "
GM—H. F. Garver ....Des Moines, Ia.
PA—H.F. Garver, " "
SECY—C.M. Garver, " "
MS—C.W. Carpenter, Enterprise, Ia.
SCO—Saylor Supply Co. Buyer, E. C. Johnson, Enterprise, Ia.
S of H—Mules, 2 elec. and 3 gasoline locos.
S of M—Hand.
PP—9 return tubular boilers.
EMP—500. Last fiscal year output 241,947 tons.

EQUALITY COAL CO.
Cricket Mine; Shaft; Seam, 48 to 72 in. thick.
PO—Bussey, Ia.;SP—Buxton, Ia.; CTY—Munroe; RR—C. & N. W.
PR—L. A. Walraven.....Bussey, Ia.
TR—Erle Brown, " "
PA—Erle Brown, " "
MS—A. Patrick, " "
EM—T. A. Albers, " "
SCO—Cricket Supply Co., " "
S of H—Mules and rope.
S of M—Hand.
PP—2 Water tube boilers, 2 pumps.
EMP—40. Last fiscal year output, 13,000 tons.
Sales Mgr., Erle Brown, Bussey, Ia., formerly Crickct Coal Co.

EXCELSIOR COAL & MINING CO.
Excelsior No. 2 Mine; Shaft, 36 to 72 in. thick.
PO—Oskaloosa, Ia.; SP—Hickory, Ia.; CTY—Monroe; RR—M. & St. L.
PR—Jno. Ramsay, Sr., Oskaloosa, Ia.
TR—G.W. Harris, " "
GM—G.W. Harris, "
SCO—Morgan Bros. Co.....Avery, Ia.
S of H—Rope. Track gauge 3 ft.
S of M—Hand.
PP—2 water tube boilers.
EMP—150. Last fiscal year output 80,000 tons.
Sales Agent, H. H. Harris..Ottumwa, Ia.

EXLINE COAL CO.
Nos. 1 and 2 Mines, Shaft.
PO—Exline, Ia. SP—Same. CTY—Appanoose. RR—C.B.&Q.
GM—A. N. John.....Exline, Ia.
PA—A. N. John.....Exline, Ia.
MS—John Clarke.....Exline, Ia.
S of H—Mules.
S of M—Hand.
PP—Boiler, 60 H.P.

FOWLER & WILSON COAL CO.
General Office, Ottumwa, Ia.
Rathbun Nos. 1 and 2, Shaft and Slope. Seam 36 in. thick.
PO—Rathbun, Ia.; SP—Same. CTY—Appanoose. RR—C.M.&St. P.
PR—E.D. Fowler, ... Ottumwa, Ia.
GM—E.D. Fowler, " "
PA—E.D. Fowler, " "
TR—W.T. Wilson, " "
GS—D. F. Cushing.....Rathbun, Ia.
MS—Sidney Voyce.....Rathbun, Ia.
SM—C.R. Mill, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 380 H. P.; 1 pump.
EMP—252. Last fiscal year output 76,574 tons.

GARFIELD COAL CO.
Out of business.

GIBSON COAL MINING CO.
Gibson No. 5 Mine, Shaft, No. 3 Seam, 3½ to 4½ ft. thick.
PO—Des Moines, Ia. SP—Clive, Ia. CTY—Polk. RR—C.M.&St.L.
PR—John B. Gibson, Des Moines, Ia.
TR—John B. Gibson, " "
GM—John B. Gibson, " "
PA—John B. Gibson, " "
MS—W.R. Gibson, " "
SM—F.W. Gibson, " "
S of H—Gasoline locos. Track gauge 3 ft.
S of M—Hand.
PP—3 water tube boilers. Sales agent, Wm. McIlwaine, Des Moines, Ia.

GOBEN COAL COMPANY.
Goben Mine, Shaft, Seam 2 ft. thick.
PO—Lucas, Ia. CTY—Lucas. RR—C.B.&Q.
PR—Geo. W. Goben, ... Lucas, Ia.
MS—Geo. W. Goben, " "
S of H—Mules.
S of M—Hand.
PP—1 boiler, 40 H. P., 1 pump.
EMP—5.

GRANT COAL CO.
Out of business.

GREEN RIDGE FUEL CO.
Mine worked out.

HARKES COAL COMPANY.
General Office, Keith & Perry Bldg., Kansas City, Mo.
Mine No. 1, Shaft, No. 2 Seam, 36 to 40 in. thick.
PO—Jerome, Ia SP—Same. CTY — Appanoose. RR—C.M. & S.P., Kansas City Div.
PR—Wm. Harkes, ... Coal City, Ill.
GM—Wm. Harkes, " "
PA—Wm. Harkes, " "
EM—Wm. Harkes, " "
TR—C. Whalen, ... Chicago, Ill.
MS—Robert Hunter, ... Jerome, Ia.
S of H—Mules. Track gauge 31 in.
S of M—Hand.
PP—2 Ottumwa return tubular boilers, total 200 H. P., and 1 pump.
EMP—137. Last fiscal year output 48,179 tons.
Sales Agent, General Wilmington Coal Co., Old Colony Bldg., Chicago, Ill.

HARVEY COAL CO.
No. 1 Mine, Slope, Seam 4 ft. 6 in. to 5 ft. 8 in. thick.
PO—Harvey, Ia. SP—Same. CTY — Marion. RR—C.B. & Q., Des Moines & Albia Br.
PR—J.A.J. Powers, ... Harvey, Ia.
GM—J.A.J. Powers, " "
TR—H.C. Austin, " "
PA—H.C. Austin, " "
EM—H.C. Austin, " "
MS—W.H. Nail, " "
S of H—Mules and 1 gasoline loco. Track gauge 36 in.
S of M—Hand.
PP—1 boiler, 25 H.P., 1 pump.
EMP—70. Last fiscal year output 26,000 tons.

HEAPS COAL CO.
Walnut Grove, Shaft, Seam 3 ft. thick.
PO—Boone, Ia. SP—Same. CTY — Boone. RR—C.&N.W.
PR—Robert Heaps, ... Boone, Ia.
TR—Thomas Hughes, " "
MS—Thomas Hughes, " "
S of H—Mules.
S of M—Hand.
PP—2 pumps.
EMP—125. Last fiscal year output 40,000 tons. Sales agent, J. W. Borts, Boone, Ia.

HIGH BRIDGE COAL CO.
High Bridge Mine, Shaft, Seam 4 ft. thick.
PO—Madrid, Ia. SP—High Bridge, Ia. CTY—Dallas, RR—C. M. St. P.
PR—Mrs. Julia A. Carlson, Des Moines, Ia.
GM—A. W. Carlson..Des Moines, Ia.
PA—A. W. Carlson, " "
MS—John Lindblom, " "
TR—G. W. Rask, High Bridge, "
EE—I.W. Peterson, " "
SCO—High Bridge Supply Co., Buyer, J. J. Liddicoat, High Bridge, Ia.
S of H—2 elec. locos. Track gauge 3 ft.
S of M—Hand.
PP—2 return tubular boilers, 1 generating unit, 2 pumps.
EMP—180. Last fiscal year output 59,475 tons. Sales Agent, A. W. Carlson, Des Moines, Ia.

HOCKING COAL CO.
Nos. 3 and 4 Mines; Shaft; Bituminous Seam, 42 to 84 in. thick.
PO—Hocking, Ia.; SP—Same; CTY—Monroe; RR—M. & St. L.
PR—Newman Erb, Minneapolis, Minn.
GM—C. W. Huntington, Minneapolis, Minn.
TR—W.W. Cole, " "
PA—W.G. Manchester, " "
CE—R.G. Kenly, " "
EM—W.G. Hodge, ... Hocking, Ia.
MS—W.G. Hodge, " "
MM—Isaac Jones, " "
EE—Isaac Jones, " "
SCO—Hocking Supply Co., buyer W.D. Ramsay, Hocking, Ia.
S of H—6 Elec. and 1 gasoline loco., mules and rope; track gauge 36 in.
S of M—Hand.
PP—10 Return tubular boilers, total 1200 H. P., 2 gen. units 500 volts D. C., and 3 pumps.
EMP—500. Last fiscal year output 372,716 tons.
Sales agent, Richard Rose..Hocking, Ia.

HOOVER FUEL COMPANY.
General Office, Lakonta, Ia.
Hoover Mine; Shaft, Seam 48 to 78 in. thick.
PO—Buxton, Ia.; CTY—Monroe; RR—C. & N. W.
PR—J. M. Timbrell, .. Lakonta, Ia.
TR—C. E. Lofland.....Oskaloosa, Ia.
GM—E.M. Baysoar, ... Albia, "
MS—E.M. Baysoar, " "
PA—E.M. Baysoar, " "
EM—M. Wright.....Albia, Ia.
MM—T. O. Grier.....Albia, Ia.
SCO—G. Brantingham Co., Albia, Ia. Buyer, G. Brantingham, Albia, Ia
S of H—2 gasoline loco.; track gauge 42 in.
S of M—Hand.
PP—2 return tubular boilers, total 300 H.P., 1 pump.
EMP—200. Last fiscal year output 100,000 tons. Sales Agent, Iowa Coal Washing Co., Lakonta, Ia.

INTER-OCEAN COAL CO.
PO—Mystic, Ia.; CTY— Appanoose.
No report.

IOWA BLOCK COAL CO.
Iowa Block Mine No. 1, Shaft, Block Field Seam, 30 to 34 in. thick.
PO—Exline, Ia. SP—Same. CTY—Appanoose. RR—C.B.&K.C.
PR—S.P. Maring, ... Exline, Ia.
TR—L. Johnson, " "
GM—L. Johnson, " "
PA—L. Johnson, " "
MS—Ed. Biggie, " "
EM—Paul Hollenbeck, " "
CE—Hall-Adams, ... Centerville, "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 120 H.P.
EMP—125. Last fiscal year output 36,000 tons. Sales Agent, O. E. Anderson, Exline, Ia

JOHNSTON, TOM, COAL MINES.
Out of business.

JOHNSON, W D, COAL CO.
No. 2 Mine, Shaft, 2nd Seam, 2½ to 3½ ft. thick.
PO—Boone, Ia. SP—Same. CTY—Same. RR—C.&N.W.
PR—W.D. Johnson, ... Boone, Ia.
TR—H.H. Canfield, " "
GM—H.H. Canfield, " "
PA—H.H. Canfield, " "
SCO—W.D. Johnson & Co.,buyer, C. C. Canfield, Boone, Ia.
MS—Andrew Johnson, " "
EM—Jas. Watson, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—3 return tubular boilers, total 180 H.P., 1 pump.
EMP—125. Last fiscal year output 26,199 tons.

JUDY COAL CO. (THE)
Judy Mine; Shaft; No. 3 Seam, 30 in. thick.
PO—Diamond, Ia.; SP—Mystic, Ia.; CTY—Appanoose; RR—C. M. & St. P.
PR—D. A. Lee, ...Centerville, Ia.
GM—D. A. Lee, " "
PA—D. A. Lee, " "
MS—A. W. Judy, " "
EE—A. W. Judy, " "
S of H—Rope and mules.
S of M—3 Elec. mach.
PP—Power purchased.
EMP—80-100.

KEYSTONE COAL MINING CO.
Keystone Mine, Shaft, No. 3 Seam, 2 ft. 10 in. to 4 ft. 2 in. thick.
PO—Des Moines, Ia. SP—Same. CTY—Polk. RR—C.M.&St.P.
PR—T.W. Carpenter, Des Moines, Ia.
TR—T.W. Carpenter, " "
GM—T.W. Carpenter, " "
PA—T.W. Carpenter, " "
MS—Geo. Heaps, Sr.
EM—B.H.Shires....Des Moines, Ia.
S of H—Mules and rope; track gauge 36 in.
S of M—4 elec. machines.
PP—2 return tubular boilers, total 160 H.P. Buy elect. power. 1 pump.
EMP—56. Last fiscal year output 60,000 tons.

LAKONTA COAL CO.
Out of business.

LITTLE CREEK COAL CO.
PO—Mystic, Ia.; CTY—Appanoose.
No report.

LODWICK BROS. COAL CO.
Mines Nos. 3, 12, 22, 29. Seams 28 to 32 in thick.
PO—Mystic, Ia.; SP—Same; CTY—Appanoose; RR—C. M. & St. P., C. B. & Q.
PR—J. B. Lodwick.....Mystic, Ia.
TR—L.L. Lodwick, ... Mystic, Ia.
GM—David Lodwick, " "
MS—David Lodwick, " "
PA—David Lodwick, " "
SM—Frank Thompson, " "
CE—G.S. Lodwick, " "
SCO—Lodwick Supply Co., Mystic, Ia. Buyer, A.J. Carter, Mystic, Ia.
S of H—Mules, steam loco. and rope; track gauge 31 in.
S of M—Hand and 4 elec. mach.
PP—1 air compressor, 4 pumps, power purchased.
EMP—400. Last fiscal year output 170,000 tons.

LONG & SONS COAL CO.
Out of business.

McCLURE, SAM, COAL CO. THE
General Office, Fort Dodge, Ia.
Lehigh Mine, Shaft, No. 3 Seam 2 ft. 4 in. to 3 ft. 4 in. thick.
PO—Lehigh, Ia. SP—Same. CTY — Webster. RR—Chicago Great Western.
GM—Sam McClure,....Fort Dodge, Ia.
MS—Wm. Heslop, ...Lehigh, "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—2 water tube boilers.
EMP—50.

McCONVILLE & SONS COAL CO.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. No report.

MADISON COAL COMPANY.
Madison Mine, Shaft, Seam 3½ to 4½ ft. thick.
PO—305 7th St., Des Moines, Ia. CTY—Polk.
PR—W. F. Moore.....Des Moines, Ia.
GM—W. F. Moore .....Des Moines, Ia.
PA—W. F. Moore.....Des Moines, Ia.
TR—W.F. Moore, " "
MS—C. E. Moore, " "
S of H—Mules. Track gauge 32 in.
S of M—Hand.
PP—2 return tubular boilers, total 160 H.P., 1 pump.
EMP—80 to 120. Last fiscal year output 24,100 tons.

MAMMOTH VEIN COAL CO.
PO—Everist, Ia.
Successors to Empire Mining Co.

MAPLE BLOCK COAL CO.
Maple Block Mine, Shaft, 3rd Seam 4 ft. thick.
PO—Des Moines, Ia.; SP—Same; CTY—Polk; RR—C. R. I. & P.
PR—Chas. Shuler.....Davenport, Ia.
TR—John Shuler.....Des Moines,, Ia.
GM—H. M. Shuler, " "
PA—H. M. Shuler, " "
MS—H. M. Shuler, " "
MM—Chas. Johnson, " "
EE—J. E. Thomas, " "
S of H—Mules and 2 elec. loco.; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 575 H. P., 4 gen. units, 250 volts D. C.
EMP—275.
Sales Agent, John Shuler, Des Moines, Ia.

MAPLE COAL CO.
General Office, Des Moines, Ia.
Maple Mine; Shaft; Seam, 42 to 60 in. thick.
PO—Eddyville, Ia.; SP—Lakonta, Ia.; CTY—Monroe; RR—C. & N. W.
PR—W. M. Shuler....Des Moines, Ia.
TR—W. M. Shuler, " "
GM—W. M. Shuler " " "
GS—W. M. Shuler, " " "
PA—W. M. Shuler " " "
MS—Clarence Chapman, Eddyville, Ia.
SCO—Hillabidle Bros., " "
S of H—Mules; track gauge, 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 300 H. P., and 1 pump.
EMP—185. Last fiscal year output, 100,000 tons.
Sales Agency, Northwesern Coal Co.

MARTIN BLOCK COAL CO.
Shaft Mine.
PO—Numa, Ia.; SP—Same; CTY—Appanoose; RR—G. R. I. & P.
GM—J. W Martin.....Numa, Ia.
PA—J. W. Martin, " "
MS—H. W. Fox, " "
SB—John Martin, " "
S of H—Mules.
S of M—Hand.
PP—3 boilers.
Capacity 500 tons per day.

MINER'S COAL CO.
Shaft Mine; Seam, 36 in. thick.
PO—Exline, Ia.; SP—Same; CTY—Appanoose; RR—C. B. & Q.
Successors to the Sundeen Coal & Mng. Co.

MOREY CLAY PRODUCTS CO.
Out of business.

NATIONAL UNION COAL MINING CO.
Ward Mine No. 1 Shaft; Lower Seam, 48 to 72 in. thick.
PO—Ward, Ia.; SP—Albia, Ia.; CTY—Monroe; RR—C. B. & Q.
PR—John K. Shaw....Baltimore, Md.
TR—W. L. Cooney, " "
GM—G. W. Hartsuck.....Ward, Iowa
PA—G. W. Hartsuck, " "
MM—Frank Efner, " "
MS—G. W. Hartsuck.....Ward, Ia.
SCO—Ward Supply Co., Buyer W. G. Hartsuck, Ward, Iowa.
S of H—Mules and 2 gasoline locos; track gauge 36 in.
S of M—Hand.
PP—2 return boilers, total 200 H. P.; 2 pumps.
EMP 300. Last fiscal year output 125,000 tons.
Sales Agent, A. R. Stone, Albia, Ia.

NEW ORIENTAL COAL & MINING CO.
New Oriental Mine; Slope; No. 1 Seam, 32 in. thick.
PO—Brazil, Ia.; SP—Same; CTY—Appanoose.
PR—Jacob Ritter, ...Brazil, Ia.
TR—Jacob Ritter, " "
GM—Jacob Ritter, " "
PA—Jacob Ritter, " "
MS—Jacob Ritter, " "
MM—W. B. Marshall, " "
EE—W. B. Marshall, " "
S of H—Mules and rope; track gauge 30½ in.
S of M—Hand.
PP—1 Ottumwa Iron Works, water tube boiler; 1 pump.
EMP—62. Last fiscal year output 10,000 tons.
Sales Agency, Fowler & Wilson Coal Co., Ottumwa, Ia.
Successors to the Oriental Coal & Mining Co.

NEWTON COAL CO.
Newton Mine, Shaft, Seam 4 ft. to 6 ft. 2 in. thick.
PO—Newton, Ia.; SP—Same; CTY—Jasper; RR—C. R. I. & P.
PR—U. G. Brown.....Newton, Ia.
GM—U. G. Brown.....Newton, Ia.
TR—Dr. H. J. Joy, " "
PA—H. A. Brown, " "
MS—Jas. Flanders.....Newton, Ia.
MM—Wm. Brown, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 boiler, 60 H. P., 1 pump.
EMP—38. Last fiscal year output, 15,000 tons.
Sales Agent, U. G. Brown, Newton, Ia.

NORWOOD-WHITE COAL CO.
General Office, Fleming Bldg., Des Moines, Ia.
Nos. 4 and 5 Mines; Shaft; 3rd Seam, 36 to 60 in. thick.
PO—Des Moines, Ia.; SP—Berwick, Ia.; CTY—Polk; RR—C. G. W., Main Line.
PR—H. M. Poole....Des Moines, Ia.
PA—W. W. Wilson....Des Moines, Ia.
GS—J. D. Phillips...Norwoodville, Ia.
EM—Bryce Hutchinson....Berwick, Ia.
MM—J. S. Piper, " "
EE—Steve Williams.....Berwick, Ia.
MS—Frank Wasky Des Moines, Ia.
SCO—Norwood Supply Co., Buyer J. W. Neasham, Norwoodville, Ia.
S of H—2 Gasoline motors and mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 240 H. P., gen. units 200 volts A. C. pump.
EMP—240. Last fiscal year output 147,866 tons.
Sales Mgr. W. W. Wilson, Des Moines. Iowa.

NUMA BLOCK COAL CO. (THE)
General Office, Seymour, Ia.
PR—D. C. DeWolf..Huntington. Mass.
GM—A. G. Widmer....Centerville, Ia.
PA—A. G. Widmer, " "
GS—Peter Thomas,.....Seymour, Ia.

Mine No. 1, Shaft; Seam 28 in. thick.
PO—Numa, Ia.; SP—Same; CTY—Appanoose; RR—C. R. I. & P.
MS—J R. Boyd.....Numa, Ia.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 275 H. P.; 1 pump.
EMP—250. Last fiscal year output 80,000 tons.

Mine No. 2, Shaft; Seam 28 in. thick.
PO—Seymour, Ia.; SP—Same; CTY—Wayne; RR—C. M. & St. P.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 275 H. P.; 1 pump.
EMP—250. Last fiscal year output 75,000 tons.

OGDEN CONSOLIDATED COAL COMPANY.
Mines Nos. 1, 3 and 5; Shaft; Iowa No. 3 Seam, 3½ to 5 ft. thick.
PO—Ogden, Ia.; SP—Same; CTY—Boone; RR—M. & St. L. and Ft. D. D. M. & So.
PR—Homer Loring.....Boston, Mass.
TR—F. M. Johnston.....Boone, Ia.
GM—E. C. Smith.....Boone, Ia.
PA—E. C. Smith.....Boone, Ia.
GS—P. P. Reese.....Ogden, Ia.
CE—P. P. Reese.....Ogden, Ia.
S of H—2 Elec. locos.; track gauge 36 in..
S of M—Hand and 2 elec. mach.
PP—4 pumps; power purchased.
EMP—300. Last fiscal year output 126,823 tons.
Sales Agent, E. C. Smith, Boone, Ia.

ORIENTAL COAL & MINING CO.
See New Oriental Coal & Mining Co.

OTTUMWA BRICK & CONSTRUCTION CO.
See Morey Clay Products Co.

PEACOCK COAL CO.
Slope Mine; Seam 30 in. thick.
PO—Brazil, Ia.; SP—Same; CTY—Appanoose; RR—C. B. & Q.
TR—Samuel Philby.....Brazil, Ia.
GS—R. F. Lawton, " "
MS—R. F. Lawton, " "
S of H—Mule; track gauge 30 inches.
S of M—Hand.
EMP—25. Last fiscal year output 5000 tons.

PEERLESS COAL COMPANY.
Mines Nos. 5, 6 and 7, 1 Slope and 2 Shafts; Walnut Block Coal Seam; 30 in. thick.
PO—Mystic, Ia.; SP—Same; CTY—Appanoose; RR—C. M. & St. P.
PR—T. E. Lee.....Mystic, Iowa.
GM—T. E. Lee, " "
TR—D. A. Lee, " "
PA—D. A. Lee.....Mystic Iowa
EM—A. W. Judy, " "
S of H—Mules and tail rope; track gauge 31 in.
S of M—Hand and 5 elec. mach.
PP—6 Return tubular boilers total 600 H. P., 3 gen. units, 220 volts, A. C. & D. C., 3 phase and 60 cycles; 3 pumps.
EMP—300. Last fiscal year output 85,000 tons.
Sales Agent, Elec. Coal Co., Mystic, Ia.

PHILLIPS MINING CO.
General Office, Ottumwa, Ia.
PR—Henry Phillips.....Ottumwa, Ia.
GM—Henry Phillips, " "
TR—Philip P. Phillips, " "
GS—A. J. Erskine, " "
PA—H. Woodford, " "
SCO—Black Diamond Store Co., Buyer, A. Decker, Ottumwa, Ia.

Foster Mine, Shaft.
PO—Foster, Ia.; SP—Same; CTY—Monroe; RR—C. M. & St. P.
MS—A. J. Erskine.....Foster, Ia.
SM—J. Harter and Claude Shields, Foster, Ia.
S of H—Rope.
S of M—Hand.
PP—4 Return tubular boilers, 1 pump.
EMP—200.

Mine No. 9 Shaft.
PO—Bear Creek, Ia.; SP—Same—CTY—Wapello. RR—C. M. & St. P.
MS—A. J. Ershine.....Ottumwa, Ia.
SM—A. Decker, " "
S of H—Rope and mules.
S of M—Hand.
PP—5 Return tubular boilers; 1 Pump.
EMP—250.

Mine No. 10 Shaft.
PO—Woodward, Ia.; SP—Phildia, Ia.; CTY—Dallas; RR—C. M. & St. P.
MS—Wallace Convey....Woodward, Ia.
SM—H. Benson, " "
S of H—2 elec. locos.
S of M—Hand.
PP—5 Return tubular boilers, 1 gen. unit, 250 volts, D. C.; 1 pump.
EMP—200.

PHOENIX COAL CO.
Phoenix Mine, Slope, Seam 28 to 30 in. thick.
PO—Mystic, Ia.; SP—Brazil, Ia.; CTY Appanoose; RR—C. B. & Q.
PR—A. B. Dudley.....Mystic, Ia.
TR—A. B. Dudley, " "
GS—A. V. Vencil, " "
MS—R. Vencil.....Mystic, Ia.
S of H—Rope; track gauge 30 in.
S of M—Hand.
PP—1 Water tube boiler.
EMP—80. Mine idle last year on account of business conditions.
Sales Agent A. B. Dudley, Mystic, Ia.

PIGEON CREEK COAL CO.
PO Exline, Ia.; CTY— Appanoose.
No report.

PRAIRIE BLOCK COAL CO.
Streepy Mine, Centerville Seam 28 to 34 in. thick.
PO—Centerville, Ia.; SP—Same; CTY—Appanoose; RR—C. R. I. & P.
PR—A. G. Widmer....Centerville, Ia.
GM—A. G. Widmer, " "
TR—A. C. Widner.....Centerville, Ia.
MS—Peter Thomas.....Seymour, Ia.
Sof H—Elec. loco; track gauge 38 in.
S of M—Elec. mach.
PP—2 Return tubular boilers, 2 gen. units.
EMP—225. Last fiscal year output 70,500 tons.

RATCLIFF COAL CO.
Ratcliff Mine; Shaft; Seam 3 to 6 ft. thick.
PO—Douds Leondo, Ia.; SP—Same; CTY Van Buren; RR—C. R. I. & P.
PR—H. L. Ratcliff..Douds Leondo, Ia.
MS—H. L. Ratcliff, " "
TR—S. M. Workman....Kosaqua, Ia.
S of H—Mules; track gauge 30 in.
S of M—Hand.
EMP—10. Last fiscal year output 6,000 tons.

RAY COAL MINING CO.
Ray Mine, Shaft, 3rd Seam, 4 to 5 ft. 8 in thick.
PO—Des Moines, Ia.; SP—Same; CTY—Polk; RR—C. B. & Q.
PR—T. A. Ray.....Des Moines, Ia.
TR—A. J. Harkins, " "
GM—C. V. Ray, " "
PA—C. V. Ray, " "
GS—T. E. Ray, " "
CE—T. E. Ray, " "
MS—Chas. Hutchinson, " "
S of H—Mules; track gauge 2 ft. 11 in.
S of M—Hand.
PP—2 return tubular boilers, total 200 H. P., 1 pump.
EMP—52. Last fiscal year output 35,000 tons.
Sales Agent, C. V. Ray, Des Moines, Ia.

REGAL COAL COMPANY.
General Office, Oskaloosa, Ia.
Regal No. 3 Mine; Shaft; Seam, 3 to 6½ ft. thick.
PO—Fraker, Ia.; SP—Albia, Ia.; CTY—Monroe.
PR—Daniel Reigel.....Oskaloosa, Ia.
PA—Daniel Reigel, " "
TR—Elizabeth Fraker, " "
MS—E. A. Richards.....Buxton, Ia.
EM—Dare Thomas.....Albia, Ia.
SCO—Brooks-Sullivan Supply Co., Buyer, Jno. Brooks and W. J. Sullivan Fraker, Ia.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—2 boilers total 160 H. P.; 1 pump.
EMP—140. Sales agent, J. L. Jones, Oskaloosa, Ia.

REX FUEL CO.
Rex No. 2 Mine, Shaft, Seam 6 ft. thick.
PO—Rex, Ia.; SP—Lakonta, Ia.; CTY—Mohaska; RR—C. & N. W.
PR—H. L. Spencer, .. Oskaloosa, Ia.
TR—H S. Howard, " "
GM—C. A. Williams.....Rex, Ia.
PA—C. A. Williams, " "
MS—John LaCoste, " "
MM—Sam York, " "
SCO—Rex Supply Co., Buyer, C. A. Cornell, Rex. Ia.
S of H—Rope; track gauge 36 in.
S of M—Hand.
PP—3 Water tube boilers, total 375 H. P.
EMP—300; Last fiscal year output 134,495 tons.

RICHARD & CRUICKSHANK COAL CO.
PO—Buxton, Ia.; CTY—Mahaska.
No report.

ROSEBUD COAL CO.
PO—Brazil, Ia.; CTY—Appanoose.
No report.

ROYAL BLOCK COAL CO.
Royal Mine, Slope, S. Ia. Block Seam, 34 to 40 in. thick.
PO—Exline, Ia.; SP—Same; CTY—Appanoose; RR—Burlington & Carrollton Br., C. B. & Q.
GM—P. N. May.....Exline, Ia.
PA—P. N. May, " "
MS—P. N. May, " "
EM—P. N. May, " "
SB—P. N. May, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 80 H. P., 1 pump.
EMP—40. Last fiscal year output 6,000 tons.

ROYAL COAL CO.
Union Mine, Shaft, Seam 4½ ft. thick.
PO—Oskaloosa, Ia.; SP—Buxton; CTY—Mohoskan; RR—C. N. W., Belle Plaine Branch.
PR—Elizabeth Fraker...Oskaloosa, Ia.
TR—J. L. Jones, " "
GM—J. L. Jones, " "
PA—J. L. Jones, " "
MS—E. A. Richards, " "
S of H—Mules; track gauge 2 ft. 11 in.
S of M—Hand.
PP—Boilers total 80 H. P.
EMP—50. Last fiscal year output 20,000 tons.
Sales Agent, J. L. Jones.

SAYLOR COAL COMPANY.
Saylor No. 2, Shaft; No. 2 and 3 Seams; 3 to 5 ft. thick.
PO—Carney, Ia.; SP—Saylor, Ia.; CTY—Polk; RR—C. & N. W.
PR—W. J. Carney.....Chicago, Ill.
TR—Q. Johnstone, " "
MS—J. D. Owen.....Carney, Ia.
GM—K. G. Carney.....Carney, Ia.
PA—K. G. Carney.....Carney, Ia.
SM—J. J. Flannery, " "
EM—C. T. Carney, " "
MM—T. J. White, " "
EE—T. J. White.....Carney, Ia.
SCO—Flannery Supply Co., Buyer, J. J. Flannery, Carney, Ia.
S of H—Mules and 4 elec. locos.; track gauge 3 ft.
S of M—Hand and 1 Elec. mach.
PP—4 Return tubular boilers, total 500 H. P., 1 gen. unit, 250 volts, D. C.; 1 pump.
EMP—400. Last fiscal year output 182,527 tons.
Sales Agent, K. G. Carney, Carney, Ia.

SCANDIA COAL COMPANY.
Scandia and Zookspur Mines, Shaft; No. 3 Seam; 2½ to 4 ft. thick.
PO—Madrid, Ia.; SP—Same and Phildia, Ia.; CTY—Boone; RR—C. M. & St. P.
PR—W. J. Carney.....Chicago, Ill.
TR—Quintin Johnstone, " "
GM—F. H. Zook.....Madrid, Ia.
PA—F. H. Zook.....Madrid, Ia.
MS—Owen Reese, " "
EM—Howard Ladd, " "
SCO—Zook Supply So., and Scandia Supply Co., Madrid, Ia.
S of H—Mules and 3 elec. loco.; track gauge 3 ft.
PP—7 Return tubular boilers total 725 H. P., 2 gen. units, 550 volts, D. C.; 1 pump.
EMP—575. Last fiscal year output 304,358 tons.
Sales Agent, F. H. Zook, Madrid, Ia.

SCANDINAVIAN COAL CO.
Scandinavian Mines No. 1 and 2. Shafts, Centerville Seam, 30 to 36 in. thick.
PO—Centerville, Ia.; SP—Same; CTY—Appanoose; RR—C. B. & Q.
PR—G. P. Polson.....Centerville, Ia.
TR—Claus Johnson, " "
PA—Claus Johnson, " "
S of H—Mules; track gauge 32 in.
S of M—Hand.
PP—4 return tubular boilers, total 240 H. P., 2 pumps.
EMP—80.

SEYMOUR COAL COMPANY.
Sold to A. G. Widmer of Numa Block Coal Co., and is not being operated.

SIEMAN COAL CO.
See Doud Bros. Coal Co.

SMILEY & HEAPS COAL CO.
PR—Samuel Smiley, Sr.....Boone, Ia.
GM—Samuel Smiley, Jr., " "
TR—Robt. Smiley, " "
PA—Robt. Smiley, " "
Sales Agent Robert Smiley, " "

Mine No. 1 Shaft, Black Jack Seam, 2 ft. 4 in. to 3 ft. 6 in. thick.
PO—Boone, Ia.; SP—Same; CTY—Same; RR—C. & N. W.
MS—Samuel Smiley, Jr.
S of H—Mules; track gauge 2½ ft.
S of M—Hand.
PP—1 pump.
EMP—75. Last fiscal year output 18,000 tons.

Mine No. 2, Shaft, Black Jack Seam, 2 ft. 4 in. to 3 ft. 6 in. thick.
PO—Boone, Ia.; SP—Same; CTY—Same; RR—C. & N. W.
MS—Thomas Adamson.
S of H—Mules; track gauge 2½ ft.
PP—1 pump.
EMP—35. Last fiscal year output 900 tons.

SMOKY HOLLOW COAL CO.
General Office, Avery, Ia.
PR—P. H. Hynes.....Avery, Ia.
GM—P. H. Hynes, " "
PA—P. H. Hynes, " "
TR—S. Phillips, " "
CE—H. E. Bennett, " "
EM—H. E. Bennett, " "
GS—Lou Backman.....Hynes, Ia.
MM—E. N. Dies.....Hynes, Ia.
SCO—Avery Supply Co., R. M. Clapp, Buyer; Avery, Ia.

Nos. 8 and 9 Mine; Shaft; Bituminous Seam, from 4 to 6 ft. thick.
PO—Avery, Ia.; SP—Same and Chisholm, Ia.; CTY—Monroe; RR—C. B. & Q.
MS—Lou Backman.....Hynes, Ia.
S of H—Mules and tail rope; track gauge 38 in.
S of M—Hand.
PP—7 Return tubular boilers, total 500 H. P., and 5 pumps.
EMP—370. Last fiscal year output 253,153 tons.
Sales Agent, P. H. Hynes, Avery, Ia.

No. 10 Mine; Shaft Bituminous Seam, 60 to 72 in. thick.
PO—Hiteman, Ia.; SP—Tower, La.; CTY—Monroe; RR—C. B. & Q., Main Line.
MS—Lou Backman.....Haynes, Ia.
S of H—1 Steam loco and mules.
S of M—Hand.
PP—3 Return tubular boilers, total 300 H. P., 1 pump.
New mine.

SOUTH DES MOINES COAL CO.
Shaft; No. 3 Seam, 4 to 7 ft. thick.
PO—Des Moines, Ia.; SP—Radium, Ia.; CTY—Polk; RR—I. U.
PR—H. J. Clark.....Des Moines, Ia.
TR—L. S. Harper, " "
GM—L. S. Harper, " "
PA—L. S. Harper, " "
MS—S. E. Wagner, " "
EM—S. E. Wagner, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—220 volts A. C., 3 phase 60 cycles 1 pump, power purchased.
EMP—175. Last fiscal year output 75,000 tons.

SUNDEEN COAL & MINING CO.
Succeeded by Miner's Coal Co.

SUNSHINE COAL COMPANY.
Sunshine Mine, Shaft, Seam 28 to 36 in thick.
PO—Centerville, Ia. SP—Brazil, Ia. CTY—Appanoose. RR—C. B. & Q.
PR—W. S. McKee. .. Centerville, Ia.
TR—Robt. A. McKee, " "
GM—Robt. A. McKee, " "
PA—Robt. A. McKee, " "
MS—D. B. Phillips, " "
CE—D. B. Phillips, " "
S of H—Mules. Track gauge 31 in.
S of M—Hand.
PP—1 pump.
EMP—85. Last fiscal year output 30,000 tons. Sales agent, Robt. A. McKee.

SWANWOOD COAL CO.
Swanwood Mine, Shaft, Seam 3½ to 5 ft. thick.
PO—408 E. 6th St., Des Moines, Ia. SP—Swanwood, Ia.; CTY—Polk; RR C. R. I. & P., Short Line.
PR—C. A. Swanson, ..Des Moines, Ia.
TR—Jos. Norwood, "
GM—Jos. Norwood, " "
MS—F. Norwood, " "
PA—A. Reay, " "
S of H—1 gasoline loco. and mules. Track gauge 36 in.
S of M—Hand.
PP—3 boilers.
EMP—220.

THISTLE COAL CO.
Nos. 2, 3 and 4 Mines.
PO—Cincinnati, Ia. SP—Same. CTY—Appanoose.
MS—David Dinning and David Steele, Cincinnati, Ia.
State report.

TRIO COAL COMPANY.
Roseland Mine, Shaft, "Des Moines Valley" Seam, 3 to 4½ ft. thick.
PO—So. Ottumwa, Ia. CTY—Wapello.
PR—Howell Price, ... Ottumwa, Ia.
GS—Howell Price, "
VP—George West, " "
TR—James Nevin, " "
GM—James Nevin, " "
PA—James Nevin, " "
EM—James Nevin.....Ottumwa, Ia.
S of H—Mules. Track gauge 32 in.
S of M—Hand.
EMP—20. Last fiscal year output 6,832 tons.

UNION COAL CO.
PO—Des Moines, Ia. SP—Same. CTY—Jasper.
MS—I. L. Silvari, .. Des Moines, Ia.
State report.

WALNUT BLOCK COAL CO.
Walnut Mine, Drift, Seam 28 in. thick.
PO—Brazil, Ia. SP—Same. CTY—Appanoose. RR—C. B. & Q.
GM—John Archbold. .... Brazil, Ia.
S of H—Mules. Track gauge 28 in.
S of M—Hand.
EMP—20. Last fiscal year output 8,000 tons.

WAPELLO COAL CO.
Wapello No. 5; Shaft; No. 3 or Main Seam, 4 ft. 5 in. to 7 ft. 5 in. thick.
PO—Hiteman, Ia. SP—Tower No. 307, Ia. CTY—Monroe. RR—C.B.&Q. Main line.
PR—T. S. Howland, ... Chicago, Ill.
TR—S. A. Corey, ... Hiteman, Ia.
GM—H. L. Waterman, .. Ottumwa, "
MS—P. H. Waterman, .. Albia, "
EM—E. R. Seidel, .. . Hiteman, "
MM—P. J. Phillips, " "
SCO—Hiteman Supply Co. Buyer, O. L. Canning.
S of H—Tail rope.
S of M—Hand.
Last fiscal year output 342,841 tons.

WESTERN COAL & MINING CO.
Out of business.

WHITE ASH COAL COMPANY.
Drift and Slope, No. 4 Seam, 4 to 6 ft. thick.
PO—Avery, Ia. SP—Same. CTY — Monroe. RR—Main Line, C.B.&Q.
Continued on Next Page.

PR—Harry Smith, ... Avery, Ia.
GM—Harry Smith, " "
PA—Harry Smith, " "
TR—R. A. Thompson, " "
MS—W. A. Smith, " "
CE—J. W. Luke, " "
EM—Harry Eck, " "
MM—L. M. Dodge, " "
S of H—Mules and rope. Track gauge 34 in.
S of M—Hand.
PP—2 McDaniels return tubular boilers, total 190 H.P., 1 engine, 250 H.P., 2 pumps.
EMP—144. Last fiscal year output 71,321 tons.
Sales Agent, Vick Stark, Avery, Ia.

WHITE OAK COAL CO.
White Oak Mine, Shaft, Seam 28 to 36 in. thick.
PO—Centerville, Ia. SP—Same. CTY—Appanoose. RR—N. & St. L., C. B. & Q.
PR—V. S. McKee.
TR—Robt. A. McKee, Centerville, Ia.
GM—Robt. A. McKee, " "
PA—Robt. A. McKee, " "
EM—R. R. Foster, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand.
EMP—50. Last fiscal year output 15,000 tons.

WILLIAMS, W. F., COAL CO.
PO New Sharon, Ia.; CTY—Mahaska.
No report.

WINIFRED COAL CO.
Lady Mary Mine; Shaft; Mystic Seam, 30 in thick.
PO—Mystic, Ia.; SP—Same; CTY—Appanoose; RR—C. M. & St. P.
PR—L. L. Lodwick.....Mystic, Ia.
TR—T. E. Williams, " "
GM—T. E. Williams, " "
PA—T. E. Williams, " "
GS—T. E. Williams, " "
CE—G. S. Lodwick, " "
EE—G. S. Lodwick, " "
MM—W. E. Lee, " "
SCO—Lodwick Supply Co., " "
S of H Rope and mules; track gauge 34 in.
S of M—1 Elec., 4 comp. air machs and hand.
PP 2 American McDaniel return tubular boilers, total 150 H. P., gen. unit, 220 volts D. C., 1 compressor. Power purchased.
EMP 140. Last fiscal year output 60,000 tons.

WOODLAND COAL CO.
Woodland Mine; Shaft, 1st Seam 34 in. thick.
PO—Centerville, Ia.; CTY—Appanoose; RR—C. R. I. & P., and C. B. & Q.
PR—John Olson.....Centerville, Ia.
TR Carl Anderson, " "
GM—A. Lofgren, " "
PA—A. Lofgren, " "
MS—A. Lofgren, " "
S of H—Mules; track gauge 32 in.
S of M—Hand.
EMP 12. Last fiscal year output 5,000 tons.

WRIGHT COAL CO.
General Office, Chicago, Ill.
Wright Mine; Shaft, Seam 36 to 48 in thick.
PO—Carney, Ia.; SP—Saylor, Ia.; CTY—Polk; RR—C. & N. W.
PR J. Jos. Wright.....Chicago, Ill
TR G. Johnstone, " "
GM—K. G. Carney.....Carney, Ia.
PA K. G. Carney, " "
MS—C. T. Carney, " "
CE—C. T. Carney, " "
EM—C. T. Carney, " "
MM—T. J. White, " "
EE John Bradley, " "
SCO—Owens Mercantile Co., Buyer, M. O. Love, Carney, Ia.
S of H—Mules, 3 Elec. loco.; tack gauge 36 in.
S of M—Hand and 2 Elec. mach.
PP—4 Return tubular boilers, 500 H. P., 1 gen. unit 250 volts D. C., and 3 pumps.
EMP—300. Last fiscal year output 167,103 tons.
Sales Agent, K. G. Carney, Carney, Ia.

KANSAS

For List of Abbreviations See Page 498.

BURNETT, J. R. COAL & MINING CO. (THE)
No. 1 Mine; Seam 38 in. thick.
PO—Pittsburg, Kan.; SP—Cornell, Kan.; CTY—Crawford; RR—M. P.
PR—J. R. Burnett, ..Pittsburg, Kan.
GM—J. R. Burnett, " "
TR—H. A. Gray, " "
GS—J. H. Price, " "
PA—J. H. Price, " "
MS—Tom. Price, " "
CE—R. A. Gray, " "
MM—Mat Frazer, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Boilers, total 185 H.P., 1 gen. unit, 1 pump.
EMP—125. Last fiscal year output 75,000 tons.

CARR COAL MINING & MFG. CO. THE
Carr Mine, Shaft, Leavenworth Seam, 24 in. thick.
PO—Leavenworth, Kan. SP—Lansing. CTY—Leavenworth. RR—A. T. & S. F., Mo. P.
PR—Edw. Carroll, , Leavenworth, Kan.
TR—F. E. Carroll, " "
GM—F. E. Carroll, " "
GS—John J. Glynn, " "
PA—John J. Glynn, " "
MS—Chas. Althoff. " "
SM—P. Gontarenitz, " "
CE—J. C. Graham, " "
EE—A. Shierley, " "
S of H—Mules.
S of M—2 elec. mach. and hand.
EMP—185. Last fiscal year output 65,463 tons. Sales agent, J. P. Douglas.

CENTRAL COAL & COKE CO.
General Office, Kansas City, Mo. 9 mines in Kansas, 2 in Missouri, 3 in Wyoming, 2 in Oklahoma and 7 in Arkansas.
PR—Charles S. Keith, Kan. City, Mo.
Asst to Pres —Frank Schopflin " "
PA—Thos. Mackie, " "
SM—Thos. Mackie. " "
VP—Harry N. Taylor.....Chicago, Ill.

Nos. 42 and 43 Mines, Shaft, Cherokee Seam.
PO—Weir, Kan. SP—Scammon, Kan. CTY—Cherokee. RR—M. K. & T., Frisco.
MS—W. C. Ernhart....Pittsburg, Kans.
S of H—Mules.
S of M—Hand.
PP—7 boilers.
EMP—405.

No. 38 Mine, Shaft, Cherokee Seam.
PO—Pittsburg, Kan. SP—Same. CTY—Crawford. RR—Santa Fe, Mo. Pac. K. C. S
MS—D L. Dunn, ...Pittsburg, Kan.
S of H—Mules.
S of M—Hand.
PP—7 boilers.
EMP—250.

Nos. 41, 39, 44 Mines, Shafts. Cherokee Seam.
PO—Weir, Kan. SP—Same. CTY—Cherokee. RR—Frisco.
MS—D. L. Dunn.....Pittsburg, Kans.
S of H—Mules.
S of M—Hand.
PP—8 boilers.
EMP—310.

Nos. 45, 48 and 49 Mines; Shaft; Cherokee Seam.
PO—Pittsburg, Kan. SP—Same. CTY—Crawford. RR—Santa Fe, Frisco, Mo., Pac.
MS—D. L. Dunn, .. Pittsburg, Kan.
S of H—Mules.
S of M—Hand
PP—4 boilers.
EMP—260.

Nos. 46 and 47 Mines, Shaft, Cherokee Seam.
PO—Pittsburg, Kan. SP—Same. CTY—Crawford. RR—Frisco, Kansas City Sou.
MS—W. C. Enrhart....Pittsburgh, Kan.s
S of H—Mules.
S of M—Hand
PP—5 boilers.
EMP—175.

CENTRAL COAL MINING CO.
PO—Burlingame, Kan. SP—Same. CTY—Osage. No report.

CHAPMAN COAL CO.
General Office, 76 W. Munro Street, Chicago, Ill.
No. 5 Mine, Shaft, "Cherokee" Seam, 3 ft thick.
PO—Mulberry, Kan. SP—Same. CTY—Crawford. RR—Frisco.
PR—R. C. Newton.....Chicago, Ill.
TR—R. C. Newton, " "
GM—J. H. Hazen, .. Mulberry, Kan.
PA—J. H. Hazen, " "
MS—J. H. Hazen, " "
EM—W. J. Morin.....Mulberry, Kans.
MM—Frank Ward, " "
EE—D. Ward, " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand
PP—3 boilers, total 300 H.P., 2 pumps.
EMP—325. Last fisal year output 145,000 tons. Sales Agent, Jno. Stein, 409 Commerce Bldg., Kansas City, Mo.

CHAPPELL CO-OPERATIVE COAL CO.
PO—Topeka, Kan. SP—Same. CTY—Shawnee. No report.

CHEROKEE-CRESCENT COAL CO.
General Office, Kansas City, Mo.
Cherokee-Crescent Mine, Shaft, Cherokee Seam, 3 ft. 2 in. thick.
PO—Roseland, Kan. SP—Carona, Kan. CTY—Cherokee. RR—Mo. Pac.
PR—I. M. Fleming, Kansas City, Mo.
GS—H. C. Jones, ... Columbus, Kan.
MS—A. H. Green, ... Roseland, "
CE—L. D. Cornelius, ..Pittsburg, "
S of H—Mules. Track gauge, 35 in.
S of M—Hand
EMP—120.

CHEROKEE & PITTSBURG COAL MNG. CO.
General Office, 9 Jackson St., Topeka, Kan.
Mines Nos. 9, 11, 14, and 15, Shaft, "Cherokee" Seam, 36 in. thick.
PO—Frontenac, Kan. SP—Same. CTY—Crawford. RR—A. T. & S. F.
TR—E. S. Copeland,.. Topeka, Kan.
MS—Joseph Fletcher, Frontenac, "
EM—W. B. Fox, " "
EE—A. J. Fletcher, " "
S of H—Mules and elec. loco. Track gauge 40 in.
S of M—Hand. Last fiscal year output 528,248 tons. Sales Agent, Joseph Fletcher, Frontenac, Kan.

CLEMENS COAL CO, THE
Nos. 1, 4, 7, 9, 10, 11, 12, 14 Mines; Shafts and Stripping; Seam, 32 to 46 in.thick.
PO—Pittsburg, Kans.; SP—Same; CTY—Crawford; RR—Frisco, K. C. S., A. T. S. F., M. K. T., and Mo. Pacific.
PR—Ira Clemens.....Pittsburg, Kans.
GM—Ira Clemens, " "
PA Ira Clemens, " "
TR—D. W. Jones, " "
GS—Frank Thomas, " "
CE—W. B .Fox, " "
S of H—Mules.
S of M—Hand and steam shovels.
EMP—1,000. Last fiscal year output, 518,306 tons.
Sales Agency, The Mackie Clemens Fuel Co.

COLUMBUS COAL CO. (THE)
Seam 36 in. thick.
PO—Columbus, Kan.; SP—Scammon, Kan.; CTY—Cherokee; RR—St. L. & S. F.
PR—C. Newland, ...Stippville, Kan.
TR—C. F. Spencer, ...Pittsburg, Kan.
GM—C. F. Spencer, " "
MS—James Davison, ..Stippville, Kan.
EM—E. B. Crandall, Pittsburg, Kan.
S of H—1 Gasoline motor and mules; track gauge 40 in.
S of M—Hand.
PP—2 Return tubular boilers, total 160 H.P.
EMP—200. Last fiscal year output 100,000 tons.

COUGHLIN COAL CO.
No. 3 Mine, Shaft, Seam 14 in. thick.
PO—Osage City, Kan. SP—Peterton, Kan. CTY—Osage. RR—A. T. & S. F.
GS—John T. Coughlin, Osage City, Kan.
MS—J. F. Graham, " "
S of H—Mules. Track gauge, 18 in.
S of M—Hand
EMP—18. Last fiscal year output 4,000 tons.

CROSS & JENKINS COAL CO.
See C. B. Jenkins Coal Co.

CROWE, J. R. COAL & MNG. CO. THE
General Office, Dwight Bldg., Kansas City, Mo.
PR—J. R. Crowe, ..Kansas City, Mo.
TR—H. D. Buchanan, " "
GM—R. A. Gray, ... Weir, Kan.
PA—R. A. Gray, " "
EM—E. F. Woodson, " "
Sales agency, Cherokee Fuel Co., Kansas City, Mo.

Mines Nos. 14, 15, and 16, Shafts, "Cherokee" Seam, 2 ft. 10 in. thick.
PO—Croweburg, Kan. SP—Mulberry, Kan. CTY—Crawford. RR—Frisco.
MS—Richard Luke, .. Croweburg, Kan.
S of H—Mules. Track gauge 36 in.
S of M—Hand
PP—6 return tubular boilers, total 900 H. P., 4 pumps.
EMP —393. Last fiscal year output 225,568 tons.

Mines Nos. 18, 19, and 20, Shafts, "Cherokee" Seam, 3 ft. 4 in. to 4 ft. 2 in. thick.
PO—Scammon, Kan. SP—Same. CTY—Cherokee; RR—Frisco and M. K. & T.
MS—W. C. Shank.....Weir, Kans.
S of H—Mules. Track gauge 36 in.
S of M—Hand
PP—7 return tubular boilers, total 875 H.P., 3 pumps.
EMP—402. Last fiscal year output 241,760 tons.

DIAMOND "B" COAL & MATERIAL CO
Out of business.

DICKSON & CO.
General Office, Omaha, Neb.
Mine No. 6, Shaft.
PO—Fuller, Kan. SP—Same. CTY—Crawford. RR—Kan. City, Sou.
GM—G. W. Megeath, .. Omaha, Neb.
PA—H. T. Lemist, " "
EM—John Yertz, ... Fuller, Kan.
MS—E. M. Roberts, .. Mulberry, "
SM—W. C. Wilcox, " "
S of H—Mules.
S of M—Hand
EMP—250.

DOUBLEDAY COAL CO.
Mine No. 6, Shaft, Cherokee Seam.
PO—Arcadia, Kan. SP—Coalvale, Kan. CTY—Crawford. RR—Frisco.
GM—F. E. Doubleday, Pittsburg, Kan.
PA—F. E. Doubleday, Jr., " "
MS—Charles Spensberger, ..Gross, "
S of H—Mules.
S of M—Hand
PP—2 return tubular boilers, total 150 H.P., 2 pumps.
EMP—71. Last fiscal year output 52,775.35 tons.

ELLIOTT COAL CORP.
Fostoria Mine, Shaft, Seam 20 in. thick.
PO—Burlingame, Kan. SP—Same. CTY—Osage. RR—A. T. & Santa Fe.
PR—Robert Elliott, Burlingame, Kan.
TR—John Bozello, " "
GM—George Elliott, " "
GS—George Elliott, " "
S of H—Mules. Track gauge 17 in.
S of M—Hand
PP—One boiler, total 35 H. P.
EMP—34. Last fiscal year output 7,918 tons. Sales agent, George Elliott, Burlingame, Kan.

EWING, G.
PO—Arcadia, Kans.; SP—Same; CTY—Crawford; RR—Frisco.
Successors to C. B. Jenkins Coal Co
No report.

FLEMING COAL COMPANY.
General Office, Kansas City, Mo.
No. 3 Mine, Stripping, Pittsburg Seam 3 ft. 7 in. thick.
PO—Skidmore, Kan. SP—Turck, Kan. CTY—Cherokee. RR—Frisco.
PR—I. M. Fleming, Kansas City, Mo.
TR—I. M. Fleming, " "
GM—I. M. Fleming, " "
SUPT—H. C. Jones, .. Skidmore, Kan.
MS—Howard Blair, " "
SM—Alex. Hermann, " "
S of H—Mules. Track gauge 36 in.
S of M—Steam shovel.
PP—2 return tubular boilers, total 150 H.P., 1 generating unit, 250 volts D.C., 2 pumps.
EMP—30.

GIRARD COAL COMPANY.
Mine No. 1, Shaft, Pittsburgh Seam, 3 ft. 4 in. thick.
PO—Radley, Kan. SP—Same. CTY — Crawford. RR—A. T. & S. F., and Frisco.
PR—J. R. Crowe, .. Kansas City, Mo.
GM—I. M. Fleming, " "
GS—Geo. Mack, ... Pittsburg, Kan.
MS—Wm. Hudson, ... Radley, Kan.
S of H—Mules and 1 elec. loco. Track gauge 36 in.
S of M—Hand
PP—3 Return tubular boilers, total 200 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—140. Last fiscal year output, 70,000 tons.

GRANSTROM, A. W., COAL CO.
PO—Osage City, Kan. SP—Same. CTY Osage. No report.

HAMILTON COAL & MERC. CO., THE
General Office, Weir, Kan.
Mines Nos. 6, 7, and 8, Shafts, "Weir City," or "Cherokee" Seam, 2 ft. 10 in. to 3 ft. 6 in. thick.
PO—Cherokee and Radley Arma, Kan. SP—Same. CTY—Crawford. RR—Frisco., Mo. Pac., A. T. & S. F.
PR—James Hamilton, ... Weir, Kan.
TR—James Hamilton, " "
GM—James Hamilton, " "
MS—Stuart Hamilton, " "
MM—Stuart Hamilton, " "
EM—James Brown, " "
SM—Alex. Hamilton, " "
S of H—Mules, and 1 gasoline loco. Track gauge 36 and 40 in.
S of M—Hand
PP—6 return tubular boilers, total 900 H.P., 3 pumps.
EMP—500. Last fiscal year output 240,000 tons. Sales agent, McAlester Fuel Co.

HISLE COAL CO.
General Office, Scammon, Kansas.
PR—L. J. Hisle, ... Scammon, Kan.
GM—L. J. Hisle, " "
TR—Pearl E. Thompson, " "
PA—Pearl E. Thompson, " "
CE—H. R. Hisle ....Scammon, Kans.
SCO—L. J. Hisle.
SB—Pearl E. Thompson.

Hisle No. 1 Mine Slope, Seam 4 ft. thick.
PO—Scammon, Kan. SP—Same. CTY—Cherokee. RR—Frisco.
MS—Frank Laning, .. Scammon, Kan.
S of H—Mules. Track gauge 36 in.
S of M—Hand.

Hisle No. 2 Mine, Slope, Seam 4 ft. thick.
PO—Scammon, Kan. SP—Same. CTY—Cherokee. RR—Frisco.
MS—Ed. Wooten, ... Scammon, Kan.
S of H—Mules. Track gauge 36 in.
S of M—Hand.

HOME RIVERSIDE COAL CO.
General Office, Leavenworth, Kan.
P. T. White, C. N. Fish, receivers, Leavenworth, Kan.
GS—C. N. Fish, .. Leavenworth, Kan.
PA—E. F. Reilly, " "
Sales agent, E. F. Reilly, " "

Mine No. 1, Shaft, "Leavenworth" Seam, 22 in. thick.
PO—Leavenworth, Kan. SP —Same. CTY—Leavenworth. RR—Mo. Pac. C. & G. W., U. P., A. T. & S. F., C. R. I. & P., C. B. & Q.
MS—Jas. Barr, .. Leavenworth, Kan.
S of H—Mules. Track gauge 22 in.
S of M—Hand.
PP—3 Kewanee return tubular boilers, total 450 H. P., 2 hoisting engines, 3 generating units, 2 pumps.
EMP—264. Last fiscal year output, 89,575 tons.

Mine No. 2, Shaft, "Leavenworth" Seam, 22 in. thick.
PO—Leavenworth, Kan. SP —Same. CTY—Leavenworth. RR—Mo. Pac. C. & G. W., U. P., A. T. & S. F., C. R. I. & P., C. B. & Q.
MS—Jas. Graham, . Leavenworth, Kan.
S of H—Mules. Track gauge 22 in.
S of M—Hand.
PP—2 Frost return tubular boilers, total 300 H.P., 2 hoisting engines, 3 generating units, 1 pump.
EMP—149. Last fiscal year output 18,077 tons.

HOTCHKISS, ED., COAL CO.
PO—Burlingame, Kan. SP—Same. CTY—Osage. No report.

JACK COAL & MINING CO.
Jackville Mine, Shaft, Seam 18 to 20 in. thick.
PO—Burlingame, Kan. SP—Same. CTY Osage. RR—A. T. & S. F.
PR—J. D. Jack, .. Burlingame, Kan.
MS—J. D. Jack, " "
S of H—Mules. Track gauge 27½ in.
S of M—Hand. Last fiscal year output 5,750 tons.

JACKSON-WALKER COAL & MATERIAL CO. (THE)
General Office, Wichita, Kan.
Mines Nos. 30 and 14, Shafts, Seams 14 to 22 in. thick.
PO—Osage City, Kan. SP—Same. CTY —Osage. RR—A.T.&S.F.
PR—G. T. Walker.....Wichita, Kans.
TR—G. T. Walker, " "
VP—J. A. Parkinson, " "
PA—Address Co., at " "
MS—James McDivitt, Osage City, "
S of H—Mules.
S of M—Hand and 3 elec. mach.
PP—Power purchased.
EMP—177. Last fiscal year output 17,249 tons.

JENKINS, C. B., COAL COMPANY.
Sold to G. Ewing.

JUNIOR COAL & MINING CO.
General Office, Kansas City, Mo.
PR—J. R. Crowe, Jr., Kansas City, Mo.
TR—J. R. Crowe, Jr., " "
GM—Jas. Reed.....Wier, Kan.
GS—Jas. Reed, " "
CE—Ed. Woodson, " "
EE—Art Jones, " "

No. 3 Mine; Strip Pit; Upper Seam, 40 to 42 in. thick.
PO—Weir Kan.; SP—Same; CTY—Cherokee; RR—Frisco.
MS—Albert Brady.....Weir, Kan.
S of H—1 Steam loco., generator and mules; track gauge, 36 in.
S of M—Hand.
PP—1 Return tubular boiler, 80 H. P., 3 electric pumps.
EMP—35. Last fiscal year output, 48,000 tons.

No. 4 Mine; Strip Pit; Under Seam, 40 to 44 in. thick.
PO—Weir, Kan.; SP—Scammon, Kan.; CTY—Cherokee; RR—Frisco; Main Line.
MS—Jos. Johnson.....Weir, Kan.
S of H—1 Steam loco.
S of M—Hand.
PP—1 Boiler, 120 H. P., 3 elec. pumps.
EMP—27. Last fiscal year output, 36,000 tons.

KANSAS STATE PENITENTIARY.
Shaft, Seam 18 in. thick.
PO—Lansing, Kan. SP—Same. CTY—Leavenworth. RR—S.F., U. P., Mo. P.
PR—J.D.Bothin, (Warden) Lansing Kan
GM—J. D. Bothin, " " "
TR—C. M. Harger, " "
PA—W. L. Williams, " "
MS—Geo. Skidmore, " "
EM—Geo. Skidmore, " "
SM—F. L. Williams, " "
EE—D. L. Temple, " "
S of H—Mules, 1 elec. and 2 steam locos. Track gauge 3 ft.
S of M—Hand.
PP—2 Water tube boilers, total 500 H. P., 2 pumps.
EMP—245. Last fiscal year output 90,000 tons.

LA BELLE COAL & MINING CO.
Out of business.

LABOR EXCHANGE BRANCH NO. 223.
See Osage City Labor Exchange.

LARSON BROS. COAL CO.
Shaft; Seam; 3 ft. 4 in. to 4 ft. thick.
PO—Weir, Kan.; SP—Same; —CTY Cherokee; RR—St. L. & S. F.
S of H— Mules; Track gauge 29 in.
S of M—Hand.
EMP—25. Last fiscal year output 10,000 tons.

LITTLE ITALY COAL MINING CO.
PO—Burlingame, Kan.; SP—Same; CTY Osage.
No report.

McCORMICK, W. B., COAL CO.
Out of business.

MACKIE, GEO. K., FUEL CO., THE
Mackie C. and Mackie F Mines; Shafts; "Cherokee" Seam; 28 to 54 in. thick.
PO—Scammon, Kan.; SP—Same and Mineral, Kan.; CTY—Cherokee.
PR—Geo. K. Mackie...Scammon, Kan.
TR—Geo. K. Mackie, " "
PA—Geo. K. Mackie, " "
TR Asst—J.W.Mackie, Scammon, Kan.
MS—John W. Morton, " "
S of H—Mules; track gauge 36 and 40 in.
S of M—Hand.
PP—5 Return tubular boilers total 520 H. P.; 2 pumps.
EMP—301. Last fiscal year output 164,500 tons.

MALLE COAL CO.
Malle Mine; Seam 2 ft. 10 in. to 3 ft. 2 in. thick.
PO—Pittsburg, Kan.; SP—Same CTY—Crawford; RR—Mo. Pac. & Frisco.
PR—Arthur Malle.....Pittsburg, Kan.
GM—Arthur Malle, " "
PA—Arthur Malle, " "
GS—Albert Malle, " "
ME—E. V. Malle, " "
S of H—1 Steam loco.; track gauge 42 in.
S of M—Hand.
PP—Boilers, total 150 H. P.
Sales Agent, Arthur Malle, Pittsburg, Kan.

MARKHAM, C. H. ,COAL CO.
Markham Mine; Stripping, 36 in. thick.
PO—Mulberry, Kan.; SP—Fuller, Kan.; CTY—Crawford; RR—K. C. S.
PR—G. H. Markham....Pittsburg, Kan.
MS—Wm. O'Toole.....Mulberry, Kans.
MM—F. J. Hardman, " "
S of H—Mules, rope and 1 steam loco.; PP—4 Pumps.
EMP—40. Last fiscal year output, 40,035 tons.

MAYER COAL CO.
General Office, Kansas City, Mo.
10 Mines in Kansas and 1 in Arkansas.
PR—John Mayer....Kansas City, Mo.
GM—John Mayer, " "
TR—K. S. Mayer, " "
PA—R. I. McGregor, " "
GS—Joseph Humble, West Mineral, Kan.
EM—R. E. Welch, " "
Sales Agent, R. I. McGregor, Kansas City, Mo.

Nos. 2, 3, 4, 5, 6, 7, 8, 9, 11 Mines; Shafts; Cherokee or Weir City Seam 32 to 42 in. thick.
PO—West Mineral, Kan.; SP—Same; CTY—Cherokee. RR—Mo. Pac., Santa Fe, M. K. & T., Frisco.
MS—Joseph Humble, West Mineral, Kan.
S of H—Mules, 1 gasoline loco.; track gauge 42 in.
S of M—Hand.
PP—10 Return tubular boilers, total 1000 H. P., 6 Pumps.
EMP—1200. Last year output 600,000 tons.

MILLER-DURKEE COAL CO., THE
Now Skidmore-Patterson Coal Co.

MISSOURI, KANSAS & TEXAS RY. CO. (Coal Dept.)
General Office, Parsons, Kan.
3 Mines in Kansas and 4 Mines in Oklahoma.
Nos. 8, 15 and 16 Mines: Shaft; Kansas Seam, 30 to 34 in. thick.
PO—Mineral, Kan.; SP—Same; CTY—Cherokee; RR—M. K. & T.
PR—C. E. Schaff.....St. Louis, Mo.
TR—Frank Johnson, " "
GS—J. H. Hibben.....Parsons, Kan.
EM—E. H. Noel, " "
PA—G. E. Scott.....St. Louis, Mo.
MS—John Ryan.....Mineral, Kan.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—4 Water tube boilers, total 320 H. P., and 1 pump.
EMP—160. Last fiscal year output 25,000 tons.

MOKA COAL CO.
General Office, Pittsburg, Kans.
Stripping Mine; Cherokee Seam, 36 in. thick.
PO—Mulberry, Kan.; SP—Same; CTY—Crawford; RR—Frisco.
PR—A. O. Blair.....Pittsburg, Kans.
TR—T. W. Caffey, " "
GM—Lee Bigley.....Mulberry, Kans.
PA—Lee Bigley, " "
MS—Lee Bigley, " "
S of H—1 Steam shovel; track gauge, 36 in.
PP—4 Pumps.
EMP—60. Last fiscal year output, 45,514 tons.
Sales Agent, O. T. Jones, Pittsburg, Kans.

NEVIUS COAL CO.
Mine No. 1, Shaft; Cherokee Seam; 3½ ft. thick.
PO—Pittsburg, Kan.; SP—Same; CTY —Crawford; RR—St. L. & S. F.
GM—E. S. Nevius ... Pittsburg, Kan.
GS—E. S Nevius, " "
PA—F. C. Nichols, " "
MS—M. M. Boggess, " "
EM—W. B. Fox, " "
S of H—Mules and 1 gasoline motor. track gauge 36 in.
S of M—Hand.
PP—2 Water tube boilers.
EMP—150.
Sales Agent, Cherokee Fuel Co., Kansas City, Mo.

OSAGE CITY LABOR EXCHANGE.
No. 4 Mine; Shaft; First Seam, 14 to 18 in. thick.
PO Osage City, Kans.; SP Same; CTY Osage; RR—A. T. & S. F.
PR Wm. Popworth, Osage City, Kans.
TR—John Getzinger, " "
GM—John Getzinger, " "
GS—John Getzinger, " "
EE—John Getzinger, " "
MS Louis N. Parre, " "
S of H—1 Elec. loco.; track gauge 20 in.
S. of M—2 Elec mach.
PP—Boiler 95 H. P., gen. unit, 2,200 volts A. C., 3 phase, 60 cycles; power purchased.
EMP—90. Last fiscal year output, 20,000 tons.
Successors to Labor Exchange Branch No. 223.

PATTON COAL & MNG. CO.
Mine No. 22, Stripping and Shaft; Seam 14 to 30 in. thick.
PO—Frontenac, Kan.; SP—Same; CTY —Crawford; RR—A. T. & S. F., and Mo. Pac.
PR—J. S. Patton.....Frontenac, Kans.
MS—J. S. Patton, " "
GM—S. J. Patton,.....Frontenac, Kan.
PA—S. J. Patton, " "
TR—M. B. Patton, " "
EM—Wm. St. John, " "
SCO—Patton's Store, Buyer, S. I. Patton, Frontenac, Kan.
S of H—1 steam loco.; track gauge 56½ in.
S of M—Hand, and steam shovels.
PP—1 boiler, total 100 H. P., 5 pumps, also purchase power.
EMP—50. Last fiscal year output 35,000 tons.
Sales Agent, Jackson & Walker Coal Co. Wichita, Kan.

PITTSBURG & MIDWAY COAL MINING CO
No. 8 Mine, Shaft, Cherokee Seam 2 ft. 8 in. to 3 ft. 4 in. thick.
PO—Pittsburg, Kan.; CTY—Crawford; RR—St. Louis & San Francisco.
PR—C. F. Spencer....Pittsburg, Kan.
GM—C. F. Spencer, " "
TR— A. H. Lanyon, " "
MS—Wm. Morgan, " "
EM—Wm. Morgan, " "
SM—J. W. Batten, " "
S of H—Mules.
S of M—Hand.
PP—3 Engines, 1 pump.

PITTSBURG-NORTHERN COAL CO.
General Office, Pittsburg, Kan.
No. 8 Mine, Shaft, Cherokee Seam 3 ft. thick.
PO—Franklin, Kan.; SP—Arma; CTY—Crawford; RR—Mo. Pac.
PR—I. M. Fleming..Kansas City, Mo.
GS—George Mack, .. Pittsburg, Kan.
EM—L. D. Cornelius, " "
MS—Ed. Smith .....Arma, Kan.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 pumps.
EMP—200. Last fiscal year output 103,898.6 tons.

PRATT-DURKEE COAL COMPANY.
1 stripping, 3 Shaft Mines; Seams 42 to 52 in. thick.
PO—Skidmore, Kan.; SP—Scammon, Kan.; CTY—Cherokee; RR—Frisco.
PR—Stephen A. Pratt..Columbus, Kan.
TR—J. H. Durkee.....Skidmore, Kan.
GM—J. H. Durkee, " "
MF—Chas. Crowder, " "
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers total 300 H. P., 4 pumps.
EMP—75. Last fiscal year output 50,000 tons.
Sales Agent, Midland Coal Co., Kansas City, Kan.

RANSOM, J. H.,
Out of business.

ROBERTSON, J. W., COAL CO.,
PO—Weir City, Kan.; SP—Same; CTY —Cherokee.
No report.

ROY & MILLNER COAL CO.
No. 16 Mine, Shaft.
PO—Weir, Kan.; SP—Same; CTY—Cherokee; RR—Frisco.
TR—W. W. Millner.....Weir, Kan.
GM—A. W. Roy.....Weir, Kan.
PA—A. W. Roy. " "
MS—A. W. Roy, " "
SM—A. W. Roy, " "
S of H—Mules.
S of M—Hand.
PP—2 Boilers total 150 H. P.

SCAMMON COAL CO.
See Hisle Coal Co.

SHERIDAN COAL CO., THE
General Office, Omaha, Neb.
Nos. 3, 4, 5, 6, 7, 8, 9, 10, 11 and 12; Mines; Shafts.
PO—Fuller and Mulberry, Kan.; SP—Same. CTY—Crawford; RR—K. C. S., Mo. Pac., Frisco.
PR—G. W. Megeath.....Omaha, Neb.
TR—A. P. Whitmore, " "
Secy—W. F. Megeath, " "
PA—H. Y. Readinger, " "
MS—E. M. Roberts.....Mulberry, Kan.
SM—Walter P. Bailey, " "

Continued on Next Page.

S of H—Mules.
S of M—Hand.
PP—16 Boilers total 2000 H. P.
EMP—1,750.

SINCLAIR COAL MINING CO.
General Office, Pittsburg, Kans.
No. 1 Mine; Slope; Seam, 36 in thick.
PO—R. F. D., Weir City, Kans.; SP—Cherokee, Kans.; RR—Frisco.
PR—J. M. Mathes.....Aurora, Mo.
TR—John McCullough, Pittsburg, Kans.
PA—E. S. Humphries, " "
MS—E. S. Humphries, " "
S of H—Rope.
S of M—Hand.
Sales Agency, P. R. Sinclair Coal Co., Springfield, Mo.

SINCLAIR FUEL CO.
General Office, Pittsburg, Kan.
No 4 Mine.
PO—Cherokee, Kan.
PR—P. R. Sinclair, ...Aurora, Mo.
VP—A. J. Sams, ...Pittsburg, Kan.
TR—C. O. Millsop, " "
Sales Agency, P. R. Sinclair Coal Co., Aurora, Mo.
Successors to P. R. Sinclair Coal Co.

SKIDMORE-PATTERSON COAL CO.
Skidmore-Patterson Mine; Stripping; Seam, 30 o 42 in. thick.
PO—Scammon, Kans.; SP—Same; CTY—Cherokee; RR—Frisco, Main Line.
PR—A. H. Skidmore..Columbus, Kans.
TR—S. L. Walker, " "
GM—W. W. Patterson...Pittsburg, Kans.
MS—J. D. Robinson, Scammon Kans.
CE—George Bevard, " "
S of H—2 Steam, 1 gasoline loco and rope; track gauge, 36 in.
S of M—Hand.
PP—4 Boilers, total 84 H. P., 3 pumps.
EMP—24. Last fiscal year output, 24,000 tons.
Successors to the Miller-Kurkee Coal Co.

SPENCER NEWLANDS COAL CO.
PO—Stippville, Kan.; SP—Same; CTY—Cherokee.
No report.

STEPHENSON, J. J. & SON, COAL & MINING CO.
Seam, 24 to 48 in. thick.
PO—R. F. D. No. 6, Pittsburg, Kans.; SP—Same; CTY—Crawford; RR—St. L. & S. F., A. T. & S. F.
PR—J. J. Stephenson, R. F. D. No. 6, Pittsburg, Kans.
TR—W. H. Stevenson, R. F. D. No. 6, " "
GM—W. H. Stephenson, R. F. D. No. 6, " "
PA—W. H. Stephenson, R. F. D. No. 6, " "
MS—W. H. Stephenson, R. F. D. No. 6, " "
New company, operating 10 months.

STRUNK COAL CO.
PO—Burlingame, Kan.; SP—Same; CTY—Osage.
No report.

WEAR COAL CO.
General Office, St. Louis, Mo.
PR—Chas. S. Keith..Kansas City, Mo.
TR—E. E. Riley, .. Kansas City, Mo.
CE—J. S. O'Flaherty, " "
EM—J. S. O'Flaherty, " "
GS—J. H. Shaw.....St. Louis, Mo.
PA—D. Simpson.....St. Louis, Mo.
SCO—Dunkirk Store, Buyer Thos. Mackie, Kansas City, Mo.

Nos. 17, 19 and 21 Mines, Shafts; Pgh. Seam, 2 ft. 10 in. to 3 ft. 2 in. thick; operate washeries.
PO—Pittsburgh, Kan.; SP—Dunkirk, and Cornell, Kan.; CTY—Crawford; RR—A. T. & S. F., and Mo. Pac.
MS—P. Roeser .....Pittsburg, Kans.
SM—W. F. Stevenson, " "
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—8 Return tubular boilers, total 1000 H. P.
EMP—730. Last fiscal year output 346,600 tons.

No. 20 Mine; Shaft, Pgh. Seam, 2 ft. 10 in. to 3 ft. 2 in.
PO—Pittsburg, Kan.; SP—Same CTY—Crawford; RR—Frisco.
MS—P. Roeser .....Pittsburg, Kan.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 200 H. P.
EMP—57. Last fiscal year output 13,129 tons.

WEIR JUNCTION COAL CO.
Schwab Mine, "Cherokee" Seam, 24 to 46 in. thick.
PO—Cherokee, Kan.; SP—Weir and Scammon, Kan.; CTY—Crawford; RR—Frisco.
PR—L. S. Schwab....Cherokee, Kan.
GM—L. S. Schwab, " "
PA—L. S. Schwab, " "
MS—L. S. Schwab, " "
CE—Harry Gaude.....Weir, Kan.
MM—Harry Gaude, " "
EM—Carl McClure, " "
SCO—Cherokee Commercial Co., Buyer, H. E. Schwab, Cherokee, Kan.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, 4 gen. units 250 volts A. C., 3 pumps.
EMP—50. Last fiscal year output 15,000 tons.
Sales Agent, L. S. Schwab, Cherokee, Kan.

WESTERN COAL & MINING CO.
General Office, St. Louis, Mo.
8 Mines in Kansas, 1 Mine in Illinois, 6 Mines in Missouri, 2 Mines in Arkansas.
Nos. 10, 13, 14, 15, 16, 17, 18 and 19 Mines, Shaft, Seam, 40 in. thick.
PO—Franklin, Kan.; SP—Same, Cornell, Cherokee and Fleming, Kan. CTY—Crawford; RR—Mo. Pac., S. Fe, Frisco.
PR—W. J. Jenkins.....St. Louis, Mo.
TR—F. M. Buckman....St. Louis, Mo.
GM—W. J. Jenkins, " "
GS—J. H. Shaw, " "
PA—D. Simpson, " "
EM—C. L. Moorman, " "
MS—P. Roeser.....Pitsburg, Kan.
S of H—Mules and elec.
S of M—Hand.

WESTERN FUEL CO.
No. 10 Mine; Shaft; Seam 14 to 24 in. thick.
PO—Osage City, Kans.; Same; CTY—Osage; RR—Mo. P. and A. T. & S. F.
PR—Gust. Johnson....Osage City, Kans.
GM—Gust. Johnson, " "
TR—Arthur V. Johnson, " "
EE—Arthur V. Johnson, " "
MS—Leo. G. Johnson, " "
MM—Leo. G. Johnson, " "
S of H—Mules; track gauge 19 in.
S of M—1 Elec. mach.
PP—Purchase power.
EMP—45. Last fiscal year output 4,000 tons.
Sales Agency, Western Fuel Co.

KENTUCKY

For List of Abbreviations See Page 498.

ABERDEEN COAL MINING CO.
Out of business.

ACME BLUE GEM COAL CO.
Mine closed down in January, 1915, perhaps permanently.

ACME COAL CO.
PO—Pittsburg, Ky.; SP—Same; CTY—Laurel.
No report.

ADVANCE COAL MINING CO.
Peerless Mine; Shaft; No. 9 Seam 4 ft. 11 in. thick.
PO—Hillside, Ky.; SP—Same; CTY—Muhlenberg; RR—L. C.
PR—C. H. Judkins.....Cleveland, O.
TR—W. E. Judkins....Greenville, Ky.
GM—W. E. Judkins, " "
PA—W. E. Judkins, " "
EE—Wm. Foster.....Hillside, Ky.
MS—John Garrett, " "
SM—Henry Tudor, " "
S of H—Mules; track gauge 36 in.
S of M—5 Elec. mach.
PP—2 Boilers total 300 H. P., gen. unit 250 volts D. C., 2 pumps.
EMP—90. Last fiscal year output 60,000 tons.
Sales Agency, Southern Coal Co., Memphis, Tenn.

AGES RIDGE COAL CO.
Drift; Harlan Seam, 42 to 60 in. thick.
PO—Ages, Ky.; SP—Same; CTY—Harlan. RR—L. & N., Wasioto & Black Mountain Div.
PR—J. K. Griffin....Knoxville, Tenn.
TR—B. A. Martin, " "
GM—J. D. Wheeler.....Ages, Ky.
GS—J. D. Wheeler, " "
PA—S. M. Wheeler, " "
SM—S. M. Wheeler, " "
MF—A. N. Parris, " "
EM—Joe McDonald.....Harlan, Ky.
S of H—Mules.
S of M—Hand.
PP—2 Pumps.
EMP—75. Output 250 tons daily.
Sales Agency, Bewley-Darst Coal Co., and Superior Coal Co., Knoxville, Tenn.

ALLBURN COAL & COKE CO.
Allburn Mines, Nos. 1, 2 and 3, Drifts, Pittsburgh No. 8 and Thacker Seams, 44 to 74 in. thick.
PO—McCarr, Ky., CTY—Pike, SP—McCarr, W. Va., RR—N. & W
PR—Frank P. Harmon, Washington, D. C.
TR—W. A. Young.....McCarr, Ky.
PA—W. A. Young, " "
GM—W. A. Wilson, " "
GS—W. A. Wilson, " "
MS—Howard Adams, " "
EM—F. A. Maysack, " "
MM—Troy Brown, " "
EE—Tate Carnes, " "
SCO—Allburn Coal & Coke Co., Buyer, W. A. Young, McCarr, Ky.
S of H—6 Elec. loco., track gauge 44 in.
S of M—5 Elec. mach.
PP—2 Water tube boilers, total 450 H. P., 2 gen. units 500 volts D. C., and 2 pumps.
EMP—225. Last fiscal year output 124,955 tons.
Sales Agents, Percy Heilner & Son, Philadelphia, Pa.

ALLEGHENY COKE CO.
Allegheny Mine; Drift; 42 to 54 in. thick.
PO—Hellier, Ky., SP—Same, CTY—Pike; RR—C. & O., Marrowbone Br.
PR—A. P. Loring, 40 State St., Boston, Mass.
TR—Caleb Loring.....40 State St. Boston, Mass.
GM—T. J. Mitchell.....Hellier, Ky.
GS—J. L. Morgan.....Hellier, Ky.
PA—R. F. McClure, " "
MM—J. C. Snyder, " "
EE—J. C. Snyder, " "
EM—Edward Holly, " "
SCO—Allegheny Coke Co. Store Buyer, R. F. McClure, Hellier, Ky.
S of H—Mules and 1 elec. loco., track gauge 44 in.
S of M—9 Comp. Air and 1 Elec mach.
PP—2 Erie City boilers, total 600 H. P., 1 gen. unit 250 volts D. C., 1 pump and 1 compressor.
EMP—150. 150 Mitchell coke ovens. Last fiscal year output 56,000 tons.
Sales Agents, Rogers Brown & Co., Cincinnati, Ohio.

AMERICAN CANNEL COAL CO.
PO—Loveland, Ky. No report.

AMERICAN FUEL CO. (THE)
General Office, Pikeville, Ky.
Alonzo Nos. 1 and 2 Mines; Drift; No. 1 Seam, 36 to 50 in. thick.
PO—Emma, Ky.; SP—Alonzo, Ky.; CTY Floyd; RR—C. & O., Big Sandy Dit.
PR—W. W. Reynolds....Pikeville, Ky.
TR—O. P. Chatfield, " "
GM—F. B. Preston.....Emma, Ky.
GS—F. B. Preston, " "
PA—F. B. Preston, " "
MS—Wm. Daniel and Jess Ward, Emma, Ky.
EE—James Ford.....Auxier, Ky.
SCO—The American Fuel Co. Store, Buyer, F. B. Preston, Emma, Ky.
S of H—Mules; track gauge 42 inches.
S of M—6 comp. air machines.
PP—1 115 H. P. water tube boiler, 1 compressor, and 1 pump.
EMP—48. Last fiscal year output 30,000 tons.
Sales Agent, O. P. Chatfield, Pikeville, Ky.

ARCHBOLD, JOHN, COAL CO.,
General Office, Evansville, Indiana.
1 Mine in Kentucky and 1 in Indiana.
Bluff City Mine; Shaft; No. 9 Seam, 4 ft. 2 in. to 4 ft. 5 in. thick.
PO—Bluff City, Ky., SP—Same, CTY—Henderson.
PR—John Archbold...Evansville, Ind.
TR—V. D. Herrenbruck, " "
GM—John Archbold, " "
PA—John Archbold, " "
CE—John Archbold, " "
GS—Edmund Archbold....Newburgh, Ind.
MM—Edmund Archbold, " "
EM—Geo. Boss.....Bluff City, Ky.
S of H—Mules; track gauge 36 in.
S of M—Pick.
Mine not operating.

ASHLAND IRON & MINING CO.
Rush No. 12 Mine, Drift, No. 7 Seam 4 ft. thick.
PO—Rush, Ky.; SP—Same; CTY—Boyd; RR—A. C. & I.
PR—W. B. Seaton.....Ashland, Ky.
GM—W. B. Seaton, " "
GS—W. B. Seaton, " "
TR—F. B. Moore, " "
PA—E. C. Jones, " "
SM—E. C. Jones, " "
MM—J. L. Mehan, " "
MS—Sam Seaton.....Rush, Ky.
S of H—Mules. Track gauge 43½ in.
S of M—Hand and 2 puncher mach.
EMP—20. Last fiscal year output 9,295 tons.

ASHLESS COAL CO.
PO—Hazard, Ky; CTY—Perry.
PR—L. M. Baford.....Roanoke, Va.
GM—T. D. Baford.....Hazard, Ky.

BAILEY, THOMAS
Caney Creek Mine.
PO—Hawesville, Ky.; CTY—Hancock.
No report.

BANK COAL CO
Imperial Mine; Drift; Jellico Seam, 35 to 42 in. thick.
PO—Rockhold, Ky.; SP—Same; CTY—Whitley; RR—L. & N.
PR—John F. Pfaff.....Rockhold, Ky.
GM—John F. Pfaff, " "
TR—Ed Houston, " "
GS—I. B. Pfaff, " "
PA—Arthur Pfaff, " "
MS—George Cox, " "
S of H—2 Elec. loco. and mules; track gauge, 36 in.
S of M—1 Elec., 7 comp. air mach.
PP—2 Return tubular boilers, total 300 H. P., gen. unit, 250 volts D. C., 1 compressor, 2 pumps.
EMP—60. Last fiscal year output, 30,000 tons.

BASTIN COAL COMPANY.
Out of business.

BASTIN & HALL.
Now Elkhorn Coal Co.

BEAVER POND COAL CO.
See Big Sandy Con. Fuel Co.

BEECH CREEK COAL CO.
Beech Creek Nos. 1 and 2, Shaft and Drift, No. 9 Seam, 5½ to 6½ ft. thick.
PO—Beech Creek, Ky., SP—Same. CTY—Muhlenberg; RR—L. & N., O. & N. Div.
PR—Dr. B. G. Henning, Beech Creek, Ky
TR—A. D. Kirkpatrick, " "
GM—A. D. Kirkpatrick, " "
PA—A. D. Kirkpatrick, " "
GS—R. R. Kirkpatrick, Beech Creek, Ky.
EE—W. H. Hines, " "
MS—W. H. Chumbley, " "
SCO—Beech Creek Coal Co. " "
Buyer, A. D. Kirkpatrick, " "
S of H—Mules, rope and 1 elec. loco.; track gauge 36 inches.
S of M—9 elec. machines.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units 250 volts D. C., 1 pump.
EMP—240. Last fiscal year output 150,000 tons.

BELL UNION COAL & MINING COMPANY.
Curlew Mine, Slope; No. 9 Seam; 4 ft. 8 in. to 5 ft. thick.
Continued on Next Page.

Bell Union Coal & Mng. Co.—Cont.
PO—Curlew, Ky.; SP—Dekoven, Ky.; CTY—Union; RR—I. C.
PR—Wm. Conway, 1619 Arch St., Phila., Pa.
TR—J. J. Coyle, 1619 Arch St., Phila., Pa.
GM—H. C. Cooney.....Curlew, Ky.
PA—H. C. Cooney, " "
EM—H. C. Cooney, " "
SM—W. H. Trout, " "
S of H—Rope; track gauge 36 in.
S of M—4 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts, D. C.; 1 pump.

BEVIER COAL CO.
Bevier Mine; Shaft; No. 9 Seam; 5½ to 6 ft. 4 in. thick.
PO—Cleaton, Ky.; SP—Same; CTY—Mulhenberg; RR—L. & N., O. & N.
PR—J. W. Bastin.....Nelson, Ky.
TR—R. S. Lyttle.....Danville, Ky.
GM—J. P. Cox.....Cleaton, Ky.
PA—J. P. Cox, " "
GS—J. P. Cox.....Cleaton, Ky.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—16 Comp. air mach.
PP—5 Atlas water tube boilers, total 700 H. P., 1 gen. unit 125 K. W. 250 volts D. C., 1 comp. and 2 pumps.
EMP—175. Last fiscal year output 127,000 tons.

BIG BRANCH COAL CO.
Big Branch Mine, Drift, Up. Elkhorn Seam, 42 to 60 in. thick.
PO—Lookout, Ky. SP—Big Branch, Ky. CTY — Pike. RR—C.&O., Big Sandy Branch.
PR—H. C. Beury....Philadelphia, Pa.
TR—J. W. Cockill, ... Lookout, Ky.
GM—J. W. Cockill, " "
PA—J. W. Cockill, " "
MS—J. W. Cockill, " "
MM—Lawrence Gambill, " "
EE—Jerry Francisco, " "
EM—Ed. Holly.....Pikeville, Ky.
S of H—1 elec. loco. and mules. Track gauge 44 in.
S of M—3 elec. and 4 comp. air mach.
PP—2 B. & W. water tube boilers, total 400 H. P., gen. unit 2,400 volts A. C., 3 phase, 60 cycles; power from Central plant at Henry Clay Mine.
EMP—42. Last fiscal year output, 40,084 tons. Sales Agency, Eaton, Rhodes & Co., Cincinnati, O.

BIG RUN COAL CO.
General Office, Winchester, Ky.
Princess Mine, Drift, No. 7 Coalton, 4 to 6 ft. thick.
PO—Princess, Ky. SP—Same. CTY—Boyd. RR—C.&O., and A.C.&I.
PR—D. S. Gay, ... Winchester, Ky.
TR—H. A. Paynter, " "
MS—Geo. W. McNeal, .. Princess, "
SM—G. B. Carter, " "
S of H—3 elec. locos. Track gauge 42 in.
S of M—3 elec. mach.
PP—1 water tube boiler 180 H.P., 1 generating unit, D. C., 1 pump.
EMP—60.

BIG SANDY CONSOLIDATED FUEL CO. INC.
Beaver Pond and Mary Luck Mines; Drifts; No. 1 Seam.
PO—Prestonsburg, Ky.; SP—Same and Auxier, Ky.; CTY—Floyd; RR—C. and O., B. and S. Div.
PR—D. C. Outcalit, Telephone Bldg., Cincinnati, O.
TR—B. F. Friend, Prestonsburg, Ky.
GM—J. W. Alley, " "
GS—J. W. Alley, " "
S of H—1 Elec. loco. and mules.
S of M—5 Elec. mach. and hand.
PP—2 Return tubular boilers, 1 gen. unit 250 volts D.C.
Sales Agency, West-Crescent Fuel Co., Toledo, O., Pintau Coal Co., Chicago, Ill.
Note—Successors to the Beaver Pond Coal Co., and Mary Luck Coal Co., contemplating taking over other mines near Prestonsburg, when able to make terms.

BLACK MOUNTAIN COAL COMPANY.
Leased to Pucketts Creek Coal Co.

BLACK DIAMOND MINING CO.
Pierce Mine, Shaft, No. 9 Seam, 5 ft. 4 in. to 5 ft. 10 in. thick.
PO—Drakesboro, Ky. SP—Same. CTY—Muhlenberg. RR—L. &N.
PR—W. W. Bridges, . Drakesboro, Ky.
GM—W. W. Bridges, " "
TR—F. E. Jones. " "
GS—J. F. Bridges, Drakesboro, Ky.
PA—T. A. Isaac, " "
MS—W. B. Franklin, " "
EE—J. L. Wilkins, "
SCO—Black Diamond Merc. Co. Buyer, T. A. Isaac, Drakesboro, Ky.
S of H—2 elec. loco. and mules. Track gauge 36 in.
S of M—7 elec. mach.
PP—3 return tubular boilers, 2 gen units, 250 volts D.C., 1 pump.
EMP—200. Last fiscal year output 125,000 tons. Sales Agent, Robert A. Bridges, Falls Bldg., Memphis, Tenn.

BLUE GRASS COAL CO.
General Office, Johnson City, Tenn.
Hazard Mine; Drift; No. 4 Seam, 42 to 66 in. thick.
PO—Hazard, Ky.; SP—Same; CTY—Perry; RR—L. & E.
PR—S. R. Jennings, Johnson City, Tenn.
TR—C. H. Anderson, " " "
GM—H. K. English, " " "
MS—C. R. Luttrell.....Hazard, Ky.
S of H—Elec. loco.
S of M—3 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., gen. unit, 250 volts D. C., 2 pumps.
EMP—75. Output 300 tons daily.
Successors to the Hazard-Dean Coal Co.

BON JELLICO COAL CO.
General Office, Knoxville Tenn.
Bon Jellico Mine, Drift, Jellico Seam, 34 to 42 in. thick.
PO—Williamsburg, Ky., SP—Bon, Ky. CTY—Whitley. RR—L.&N.
PR—Arthur Groves, .. Knoxville, Tenn
TR—W. J. Everett, " "
GM—E. B. Taylor.....Mt. Ash, Ky.
GS—E. B. Taylor, " "
PA—E. B. Taylor " "
MM—Frank Smith.....Bon Jellico, Ky.
EE—Frank Smith. " "
MS—John E. Taylor....Bon Jellico, Ky.
EM—Harry E. Taylor.....Mt. Ash, Ky.
S of H—2 Elec. loco., and mulcs; track gauge 44 in.
S of M—5 Elec. mach.
PP—Boiler, 150 H. P., 1 gen. unit, 250 volts D.C.
EMP—200. Last fiscal year output 90,000 tons. Sales agent, Frank Floyd, Knoxville, Tenn.

BORDERLAND COAL CO.
General Office, Borderland, W. Va.
PR—Edw. L. Stone, .. Roanoke, Va.
TR—E. B. Fishburn, " "
GM—L. E. Armentrout, Borderland, W. Va.
PA—L.E. Armentrout, " "
GS—C.A. Jones " "
EM—J. P. Shockey, " "
MM—D.E. Blanton " "
EE—D.E. Blanton, " "
SM—F.L. Leckie, " "
Sales agency, Borderland Coal Sales Co., Cincinnati, O.

Borderland No. 1 Mine, Drift, Winifrede Seam, 48 to 96 in. thick. Operate Washery.
PO—Borderland, W. Va. SP—Same. CTY—Mingo. RR—N.&W.
MS—V. A. Miller....Borderland, W.Va.
S of H—1 Steam and 8 Elec. loco.; track gauge 48 in.
S of M—6 Elec. mach.
PP—2 Return tubular Atlas boilers, total 300 H. P., 2 gen. units 250 volts D. C., 3 pumps.
EMP—250. Last fiscal year output 179,437 tons.

Borderland No. 2 Mine, Drift, Winifrede Seam, 4 to 7 ft. thick. Washery.
PO—Borderland, W. Va. SP—Armen, W. Va. CTY—Mingo. RR—N &W
MS—P. A. Grant....Borderland, W.Va.
S of H—7 elec. loco. Track gauge 42 in.
S of M—6 elec. mach.
PP—3 Return tubular Atlas boilers, total 450 H. P., 2 gen. units, 250 volts D. C., 3 pumps.
EMP—175. Last fiscal year output 149,448 tons.

BOWYER & POFF
Old Diamond Mine.
PO—East Bernstadt, Ky.; CTY— Laurel.
No report.

BROADWAY COAL MINING CO.
General Office, 1214-19 Exchange Bldg. Memphis, Tenn.
Broadway Mine, Shaft, No. 9 Seam, 54 to 66 in. thick.
PO—Simmons, Ky. SP—Same. CTY—Ohio. RR—Louisville Div., Ill. Central.
PR—W. W. Simmons, Memphis, Tenn.
TR—W. W. Simmons, " "
MGR—Geo. M. Burton, . Simmons, Ky.
MS—Charles Hendrie, " "
EM—Charles Hendrie, " "
SCO—Broadway Coal Mining Co. Store, Buyer, Geo. M. Burton, Simmons, Ky.
S of H—1 elec. loco. Track gauge 36 in.
S of M—20 Comp. air mach.
PP—2 Atlas and 1 Dan Shea return tubular boilers, total 450 H.P., 250 volts D.C., 1 air comp. and 6 pumps.
EMP—250. Last fiscal year output 149,000 tons. Sales Agency, Broadway Coal & Ice Co., Memphis, Tenn.

BRUSH CREEK MINING & MFG. CO.
Blue Star Mine, Drift, Dean Seam, 4½ to 5 ft. thick.
PO—Wheeler, Ky. SP—Same. CTY — Knox. RR—Cumberland RR.
PR—R. L. Wheeler, ... Wheeler, Ky.
TR—W. B .Siler, ... Jellico, Tenn.
GM—R. L. Wheeler, .. Wheeler, Ky.
GS—R. L. Wheeler, " "
PA—R. L. Wheeler, " "
MS—Mike Donohoo.....Wheeler, Ky.
CE—F. R. Sargent, ... Wheeler, "
EM—F. R. Sargent, " "
SM—R. L. Wheeler, " "
S of H—Milwaukee Gasoline loco. and mules; track gauge 36 in.
S of M—14 Comp. air mach.
PP—1 Walsh & Welder return tubular boiler, 150 H.P., 1 air comp. and 3 pumps.
EMP—125. Last fiscal year output 90,000 tons. Sales agency, Procter Coal Co., Knoxville, Tenn.

BUFFALO CREEK COAL CO.
General Office, First National Bank Bldg., Cincinnati, O.
PR—H. L. Laws, First National Bank Bldg., Cincinnati, O.
Note—At present a land holding company, but charter allows operating which may be done later.

BURK HOLLOW COAL CO.
Burk Hollow Mine, Drift, Blue Gem Seam, 22 to 26 in. thick.
PO—Jellico, Tenn.; SP—Same; CTY—Campbell; RR—L. & N.
PR—Dr. S. B. Snyder....Jellico, Tenn.
TR—W. H. Hobbs, " "
PA—W. H. Hobbs, " "
GM—G. W. Smith, " "
MS—G. W. Smith, " "
EM—B. L. Lloyd, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—5 pumps.
EMP—60. Last fiscal year output 20,000 tons.
Sales Agency, Sou Coal & Coke Co., Knoxville, Tenn.

BURNS BLUE GEM COAL CO.
Drift Mine; Blue Gen Seam, 24 to 32 in. thick.
PO—Gatliff, Ky.; SP—Same; CTY—Whitley; RR—L. & N., Pine Mountain Br.
PR—Garfield Howard.....Gatliff, Ky.
TR—James Sheeley " "
PA—James Sheeley, " "
GM—John Burns, " "
MS—Henderson Ramsey, " "
EM—W. M. Archer, " "
SCO—Gatliff Coal Co., " "
S of H—Mules.
EMP—40. Output from Sept. 1, 5,800 tons.
Sales Agency, Southern Coal & Coke Co., Knoxville, Tenn.

BURNWELL COAL & COKE CO.
General Office, Pottsville, Pa.
Mine in Kentucky Tipple in W. Va.
Burnwell Mine, Drift, 2 gas seams, 48 to 78 in. thick.
PO—Sprigg, W. Va.; SP—Same; CTY—Mingo, RR—N. & W.
PR—E. Barlow.....Mahanoy City, Pa.
TR—Geo. W. Barlow, " "
Sec.—E. A. Beddall.....Pottsville, Pa.
GM—Thomas Beddall...Sprigg, W. Va.
PA—Thomas Beddall, " "
EM—Thomas Beddall, " "
MM—Horace Beddall. " "
EE—Horace Beddall, " "
SCO—Burnwell Co., Buyers, James H. Hall and Thos. Beddall, Sprigg, W. Va.
S of H—Mules and 3 Elec. loco.; track gauge 48 in.
S of M—5 elec. machines.
PP—3 Erie return tubular boilers, total 350 H. P., 2 gen. units 250 volts D. C.
EMP—90. Last fiscal year output 84,500 tons.
Sales Agent, E. A. Beddall, Pottsville, Pa.

CARBONDALE COAL & COKE CO.
Carbondale Mine, Drift; No. 9 Seam, 4 ft. 2 in. to 4 ft. 8 in. thick.
PO—Dawson Springs, Ky.; SP—St. Charles, Ky., CTY—Hopkins; RR—Ill. Cent., Louisville Div.
PR—C. S. Bookwalter....Paducah, Ky.
GM—W. G. Wright..Dewson Springs, Ky.
TR—W. G. Wright..Dawson Springs, Ky.
PA—W. G. Wright, " "
MS—Robert Hart, " "
EM—Robert Hart, " "
SM—C. O. Lynch, " "
MM—Nick Smothers, " "
S of H—Mules and rope, track gauge 3 ft.
S of M—10 Comp. air machines.
PP—4 Walton water tube boilers total 450 H. P.; 1 air comp.; 2 pumps.
EMP—125. Last fiscal year output 87,997 tons.
Sales Agent, C. M. Ricker, Paducah, Ky.

CALDWELL COAL CO.
Out of business.

CAMP COAL CO.
Now Wheeler Coal Co.

CARTER COAL CO.
General Office, Coalwood, W. Va.
6 Mines in West Va., 4 Mines in Ky.
PR—Geo. L. Carter....Coalwood, W.Va.
TR—T. F. Davis, " "
Asst. TR—C. A. Hall, " "
VP—J. C. Stone, " "
Asst VP—S. L. Jennings, " "
GS—F. A. Garth, " "
PA—S. C. Minnich, " "
EM—R. L. Keel, " "
MM—C. K. Holt, " "
EE—C. K. Holt, " "
Sales Agencies, Carter Coal Co., Coalwood, W. Va.; and Wm. C. Atwater, New York, N. Y.

Warren No. 4, Drift, Dean Seam, 4 to 6 ft. thick; operate washery.
PO—Warren, Ky., SP— Same, CTY—Knox; RR—Cumberland R. R.
MS—W. R. Rainey.....Warren, Ky.
SM—R. F. Pierce, " "
S of H—12 Elec. loco., track gauge 48 in.
S of M—15 Elec. mach.
PP—5 Atlas water tube boilers, total 625 H. P., 3 gen. units 250 volts D. C., 2 pumps.
EMP—300 Last fiscal year output 200,000 tons.

Trosper No. 1, Dean Seam, 4 to 6 ft. thick; operate washery.
PO—Trosper, Ky., SP—Same, CTY—Knox; RR—Cumberland R. R.
MS—Roy Rainey.....Trosper, Ky.
SM—D. P. Martin, ... Trosper, Ky.
S of H—Mules and 1 elec. loco., track gauge 42 in.
S of M—5 Elec machines.
PP—Power furnished from Warren Mine, 2 pumps.
EMP—110. Last fiscal year output 43,000 tons.

Anchor Mine, Dean Seam, 4 ft. thick.
PO—Anchor, Ky., SP—Same, via Artemus, Ky., CTY—Knox. RR—L.& N. Cumberland R. R.
MS—J. B. Rogers.....Anchor, Ky.
SM—J. L. Jennings, " "
S of H—3 Elec. loco.; tarck gauge 42 in.
S of M—Elec. machines.
PP—2 Return tubular boilers, 250 H. P., total, 1 gen. unit 250 volts D. C., 1 pump.

Trosper Mine, Drift, Dean Seam, 4 ft. thick; operate washery.
PO—Trosper, Ky., SP—Same, via Artemus. RR—L. & N., Cumberland R. R.
MS—Roy Raney.....Trosper, Ky.
SM—Daniel Martin, " "
S of H—2 Elec. loco.; track gauge 42 in.
S of M—Elec. machines.
PP—Power furnished from Warren Mine.

CATRON CREEK COAL CO.
Catrons Creek Mine; Drift; Harlan Seam, 48 in. thick.
PO—Harlan, Ky.; SP—Same; CTY—Harlan; RR—L. & N.
PR—J. K. Griffin....Knoxville, Tenn.
GM—J. K. Griffin, " "
TR—B. A. Morton, " "
PA—M. R. Howard.....Harlan, Ky.
EM—Jos. McDonald, " "
S of H—Mules.
S of M—Hand.
PP—Power purchased, 1 pump.
EMP—200. Last fiscal year output, 120,000 tons.
Sales Agency, Bewley-Darst Coal Co., Knoxville, Tenn.

CENTER, WM.
Crescent Mine; Drift; Pgh. Seam.
PO—Viva, Ky.; SP—East Bernstadt, Ky.; CTY—Laurel; RR—L. & N.
GM—Wm. Center.....Viva, Ky.
SM—John Center, " "
S of H—Mules.
S of M—Hand.

CENTRAL COAL & IRON CO.
Central Mine; Shaft; Western Kentucky No. 9 Seam; 54 to 60 in. thick.
PO—Central City, Ky.; SP—Same; CTY—Muhlenberg; RR— Illinois Central and L. & N.
PR—S. J. Gish.....Central City, Ky.
GM—S. J. Gish, " "
GS—Dave Salsburg, " "
PA—S. P. Taylor, " "
EM—B. E. Hess, " "
EE—P. H. McDowell, " "
MS—D. A. Woodburn, " "
TR—L. L. Dunham, New York City, N.Y.

Continued on Next Page.

SCO—Central Coal & Iron Co., Buyer, S. J. Gish, Central City, Ky.
S of H—3 Elec. loco.; track gauge, 36 in.
S of M—Hand and 2 Elec. mach.
PP—5 R turn tubular boilers, total 650 H. P., 2 gen. units, 250 volts D. C., 2 pumps.
EMP—287. Last fiscal year output, 116,950 tons.
Sales Agent, J. H. Small, Central City, Ky.

CHENOA-HIGNITE COAL CO.
General Office, Pineville, Ky.
PO—Chenoa, Ky.; SP—Same; CTY—Bell; RR—L. & N.
PR—F. G. Burnette.....Chenoa, Ky.
GM—W. H. Hollingsworth, Pineville, Ky.
PA—A. T. Cairns, " "
S of H—Elec. loco.
S of M—Elec.
PP—Power purchased.
EMP—80.

CLAY, HENRY, COAL & COKE CO.
Henry Clay; Drift; Upper Elkhorn Seam 42 to 60 in. thick.
PO—Lookout, Ky.; SP—Henry Clay, Ky.; CTY—Pike; RR—C. & O., Big Sandy Branch.
PR—W. J. Beury, 3432 N. 17th St., Philadelphia, Pa.
TR—J. W. Cockill.....Lookout, Ky.
GM—J. W. Cockill, " "
PA—J. W. Cockill, " "
MM—Lawrence Gambill, " "
EE—Jerry Francisco, " "
SM—W. B. Cockill, " "
MS—Wall Wiley, " "
EM—Ed. Holly.....Pikeville, Ky.
S of H—1 Elec. loco. and mules; track gauge 44 in.
S of M—3 Elec. mach.
PP—2 B. & W. water tube boilers, total 400 H. P., gen. units 2400 volts A. C., 3 phases and 60 cycles, and 250 volts D. C.; also furnish power to Big Branch Coal Co.
EMP—49. Last fiscal year output 49,864 tons. Sales Agency, Eaton, Rhodes & Co., Cincinnati, O.

CLEAR FORK COAL & COKE CO.
General Office, Middlesboro, Ky.
Clear Fork, Mine, Drift, Mingo Seam, 3½ to 6 ft. thick.
PO—Fonde, Ky., SP—Same, CTY—Bell. RR—L. & N. & Sou Ry., Clear Fork Branch.
PR—J. D. Templin....Middlesboro, Ky.
TR—T. Milan, " "
GM—G. P. Morrison.....Fonde, Ky.
PA—G. P. Morrison, " "
MS—Peter Rerr, " "
MM—M. M. Compliman, " "
EE—Jas. Brockett, " "
EM—R. E. Richardson..Middlesboro, Ky
SCO—Clear Fork Coal & Coke Co. Store, Buyer, W. W. Johnson, Fonde, Ky.
S of H—17 Elec. loco., track gauge 44 in.
S of M—Hand and 7 elec. mach.
PP—6 Walsh & Wedlner water tube boilers, total 900 H. P., 3 gen. units 250 volts D. C., 6 pumps.
EMP—250. Last fiscal year output 275,000 tons.

CLEARFIELD LUMBER CO.
Road Fork No. 3 Mine; Drift; No. 2 Seam, 2 to 4 ft. thick.
PO—Clearfield, Ky., SP—Wrigley, Ky.; CTY—Rowan; RR—Morehead & North Fork.
PR—A. W. Lee.....Clearfield, Pa.
TR—John W. Wrigley, " "
GM—Geo. H. Gearhart....Clearfield, Pa.
MS—Guy Snyder, ... Clearfield, Ky.
PA—Guy Snyder, " "
SCO—Clearfield Supply Co., " "
Buyer, H. M. Turner, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
PP—1 Pump. (No power).
EMP—15. Last fiscal year output 7,759.3 tons.

CLERE, F. H. (Lessee)
Clere Mine, Drift, No. 7 Seam, 2 to 4 ft. thick.
PO—Coalton, Ky., SP—Same, CTY—Boyd; RR—A. C. & I. " "
GM—F. H. Clere, " "
S of H—Mules.
S of M—Hand.
EMP—25. Last fiscal year output 11,877 tons.

CLIFF COAL CO. (THE)
General Office, Portsmouth, O.
Cliff Mine, Slope.
PO—Cliff, Ky.; SP—Same; CTY—Floyd; RR—C. & O.
PR—B. F. Vincent.....Cliff, Ky.
PA—H. C. Stalder, " "
GM—H. C. Stalder, " "
GS—D. E. Woodruff, " "
EM—Edward Holly.....Pikesville, Ky.
SCO—The Cliff Coal Co.; Buyer, G. B. Hughes, Cliff, Ky.
S of H—Mules; track gauge 36 in.
S of M—5 Elec. mach.
PP—2 boilers, total 300 H. P., 1 gen. unit, 250 volts D. C.
Sales Agent, The Wonderland Coal Co., Portsmouth, O.

CLIFTY CONSOLIDATED COAL CO.
PO—Clay, Ky.; SP—Same; CTY—Webster.
No report.

CLIMAX COAL CO.
General Office, Knoxville, Tenn.
Climax and Sunbeam Mines; Drift; Up. Hignite Seam, 41 to 42 in. thick; operate washery.
PO—Shamrock, Ky. SP — Edgewood, Ky.; CTY—Bell; RR—L. & N., C. V. Div.
PR—L. C. Gunter....Knoxville, Tenn.
TR—H. L. Johnston, " "
GM—R. E. Howe.....Shamrock, Ky.
PA—R. E. Howe, " "
GS—R. E. Howe, " "
MS—H. B. Broughton, " "
MM—Alex. Patterson, " "
EE—H. A. Sparks, " "
SM—M. E. Brown, " "
S of H—3 Elec. loco.; track gauge 44 in.
S of M—5 Elec. mach.
PP—2 Return tubular, Houston and Stanwood & Gamble, boilers, total 300 H. P., gen. unit, 250 volts D. C, 1 pump.
EMP—150. Last fiscal year output 100,000 tons. Sales Agent, S. W. Jayne, Knoxville, Tenn.

CLOVER CREEK COAL CO.
PO—Providence, Ky.; SP—Same; CTY—Webster; RR—L. & N., I. C.
Shaft Mine; No. 11 Seam, 66 in thick.
PR—F. V. Ruckman, Providence, Ky.
TR—D. J. Ruckman, " "
GM—D. J. Ruckman, " "
GS—E. B. Robinson, " "
PA—E. M. Young, " "
MS—B. R. Monroe, " "
EM—Thos. O. Young, " "
MM—Joe. Shade, " "
SCO—Ruckman Store Co., " "
S of H—Mules.
EMP—90. Output daily, 600 tons.
Successors to Webster County Coal Co.

CLOVER FORK COAL CO.
Leased to Clover Fork Mining Co.

CLOVER FORK MINING CO.
Clover Fork Mine, Drift, Harlan Seam, 52 in. thick.
PO—Kitts, Ky., SP—Same, CTY—Harlan. RR—L. & N., Clover Fork Br.
PR—Geo. P. Fitz.....Kitts, Ky.
TR—Geo. P. Fitz, " "
GM—B. W. Whitfield, " "
MS—R. H. Wolford, " "
SM—A. F. Whitfield, Jr., " "
SCO—Clover Fork Coal Co. Store, " "
S of H—3 Elec. loco; track gauge, 42 in.
S of M—5 Elec. mach.
EMP—100. Last fiscal year output 122,792 tons.
Sales Agents, Brewley-Darst Coal Co, Knoxville, Tenn.

COATS, N. A.
High View Mine.
PO—Cromwell, Ky.; CTY—Butler.
No report.

COIL COAL CO.
Coil Mine; Shaft; No. 11 Seam.
PO—Madisonville, Ky.; SP—Same; CTY—Hopkins; RR—L. & N.
GM—W. D. Coil.....Madisonville, Ky.
PA—W. D. Coil, " "
EM—N. E. Stone, " "
MS—J. M. Cardwell, " "
SM—H. H. Coil, " "
S of H—Elec. loco. and mules.
S of M—Elec. mach. and hand.
PP—Boiler, 200 H.P., 1 gen. unit 250 volts D C.
EMP—80.

COLEMAN MINING CO.
Fox Ridge Mine, Drift, Straight Creek Seam, 42 in. thick.
PO—Cary, Ky., SP—Pineville, Ky., CTY—Bell; RR—L. & N., Straight Creek Branch.
PR—Daniel Scanlon.....Louisville, Ky.
TR—G. T. Rider, " "
VP—C. R. Coleman.....Cary, Ky.
GM—C. R. Coleman, " "
PA—C. R. Coleman, " "
GS—A. T. Wilson, " "
MM—Tom Swanner, " "
EM—Johnston & Yager...Pineville, Ky.
SM—D. Weidley .....Cary, Ky.
SCO—Coleman Mining Co., Buyer, C. R. Coleman, Cary, Ky.
S of H—3 Elec. loco., track gauge 36 in.
S of M—10 comp. air machines.
PP—2 Atlas return tubular boilers, 1 gen. unit 250 volts D. C., 1 air comp. and 4 pumps.
EMP—124. Last fiscal year output 55,592.90 tons.

COLONIAL COAL & COKE CO.
Nos. 1 and 2 Mines, Drift; No. 3, Seam.
PO—Prestonburg, Ky.; SP—Colonial Station, Ky.; CTY—Floyd.
PR—E. E. Kaercher....Prestonburg, Ky.
TR—C. W. Evans, " "
GM—C. W. Evans, " "
PA—John D. Ray, " "
MS—J. C. Smith.....Prestonburg, Ky.
EE—Fred Irvin, " "
EM—W. T. Griffith....Pikeville, Ky.
S of H—Elec. loco; track gauge 42 in.
S of M—5 Elec. mach.
PP—Boilers, 300 H.P., 1 gen. unit, 250 volts D. C.
EMP—95.

COLUMBIA COAL CO.
Columbia Mine, Drift, Seam, 3 ft. thick.
PO—Gravity, Ky. SP—Middleboro, Ky. CTY—Bell. RR—L. & N., Sou.
PR—E. R. Vowels, ... Gravity, Ky.
GM—F. F. Sharp, " "
MS—R. Watkins, " "
EE—F. Scott, " "
S of H—2 elec. loco. Track gauge 44 in.
S of M—3 elec. machines.
PP—2 Return tubular boilers, total 300 H. P.; gen. unit, 250 volts D. C.; 3 pumps.
EMP—60. Last fiscal year output, 44,000 tons.

CONGLETON COAL CO.
PO—Idamay, Ky. SP—Same. CTY—Lee.
No report.

CONSOLIDATED COAL CO.
Karnes Mine.
PO—Island, Ky. SP—Same. CTY—McLean. No report.

CONSOLIDATION COAL CO., THE
General Office, Continental Building, Baltimore, Md.
101 Mines in Md., West Va., Pa., and Ky.
Chairman of Board, C. W. Watson, Baltimore, Md.
PR—J. H. Wheelwright, " "
Secy—T. K. Stuart, " "
Mgr. of Trans—W. L. Andrews, " "
Genl. Auditor—A. S. Dunham, " "
VP—F. S. Landstreet, Bankers Trust Bldg., New York, N. Y.
VP—Geo. T. Watson..Fairmont, W. Va.
TR—S. L. Watson, " "
GM—F. R. Lyon, " "
PA—A. T. Watson, " "
PA—Asst., F. C. Davis, " "
CE—Frank Haas, " "
CE—Asst., J. C. Gaskill, " "
Chief Engineer, All Divisions—John G. Smyth .....Fairmont, W. Va.
Supt. P. & M. Dept.—R. L. Kingsland, Fairmont, W. Va.
Eng. of Tests—R. E. Rightmire, Fairmont, W. Va.
Live Stock Buyer—Frank Amos, Fairmont, W. Va.
Genl. Mgr. of Sales—F. W. Wilshire, Bankers Trust Bldg., New York, N.Y.
Western Mgr. of Sales—E. M. Mancourt, Fisher Bldg., Chicago, Ill.

GM—(Miller's Creek Div), Garner Fletcher, Van Lear, Ky.
CHIEF ENG—(Miller's Creek Div.) L. A. Vockrodt, Van Lear, Ky.
EE—(Miller's Creek Div.) A. E. Griffith, Van Lear, Ky.
SCO—The Consolidation Store Co., Van Lear, Ky.
Central Power Plant, 4 Erie City water tube boilers, total 1,000 H. P., 2 750 turbine steam, gen. units, 4,000 volts A. C., 3 phase. Sales Agent, F. W. Wilshire, New York, N. Y.

No. 151 Mine; Drift; Miller's Creek Seam No. 1, 33 to 54 in. thick.
PO—Van Lear, Ky.; SP—Van Lear Jct., Ky.; CTY—Johnson; RR—Miller's Creek.
MS—W. Zuendorff.....Van Lear, Ky.
S of H—7 Elec. loco.; track gauge, 42 in.
S of M—10 Elec. mach.
PP—From central plant.
EMP—213. Last fiscal year output, 121,411 ton.

No. 152 Mine; Drift; Miller's Creek Seam, 36 to 54 in. thick.
PO—Van Lear, Ky.; SP—Van Lear Jct., Ky.; CTY—Johnson; RR—Miller's Creek.
MS—W. Zuendorff.....Van Lear, Ky.
S of H—4 Elec. loco.; track gauge, 42 in.
S of M—9 Elec. mach.
PP—From central plant, 3 pumps.
EMP—91. Last fiscal year output, 82,234 tons.

No. 153 Mine; Drift; Miller's Creek Seam No. 1, 34 to 54 in. thick.
PO—Van Lear, Ky.; SP—Van Lear Jct., Ky.; CTY—Johnson; RR—Miller's Creek.
MS—H. Martin.....Van Lear, Ky.
S of H—5 Elec. loco.
S of M—7 Elec. mach.
PP—From central plant, 4 pumps.
EMP—163. Last fiscal year output, 106,282 tons.

No. 154 Mine; Drift; Miller's Creek Seam No. 1, 36 to 54 in. thick.
PO—Van Lear, Ky.; SP—Van Lear Jct., Ky.; CTY—Johnson; RR—Miller's Creek.
MS—H. Martin.....Van Lear, Ky.
S of H—10 Elec. loco.
S of M—12 Elec. mach.
PP—From central plant, 2 pumps.
EMP—234. Last fiscal year output, 206,254 tons.

No. 155 Mine; Slope; Miller's Creek Seam No. 1, 36 to 54 in. thick.
PO—Van Lear, Ky., SP—Van Lear Jct., Ky.; CTY—Johnson; RR—Miller's Creek.
MS—F. J. Ice.....Van Lear, Ky.
S of H—3 Elec. loco.
S of M—7 Elec. mach.
PP—From central plant, 1 pump.
EMP—127. Last fiscal year output, 30,254 tons.

CONTINENTAL COAL CORPORATION.
General Office, Chattanooga Tenn.
PR—F. B. Martin, Chattanooga. Tenn.
TR—S. O. Le Seuer, " "
GM—W. L. Moss, ... Pineville, Ky.
GS—H. M. Stokes,.. Straight Creek, "
PA—F. M. Meadows, ..Pineville, "
SB—F. M. Meadows, " "
EE—L. E. Yoder .....Pineville, Ky.
CE—L. E. Yoder, " "
Sales agent, H. L. Cory, Chattanooga, Tenn.

Glendon Mine, Drift, Straight Creek Seam, 36 to 48 in. thick.
PO—Arjay, Ky. SP—Same. CTY—Bell RR—L. & N., Left Fork Div.
SM—W. H. Simpson, ... Arjay, Ky.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—175. Last fiscal year output 125,000 tons.

Cary and Castro Mines, Drifts, Straight Creek Seam, 30 to 42 in. thick.
PO—Cary, Ky. SP—Same. CTY—Bell. RR—L. & N., Left Fork Div.
MS—H. M. Stokes, Straight Creek, Ky.
SM—W. D. Faulkner, ... Cary, Ky.
S of H—Mules. Track gauge 36 and 44 in.
S of M—Hand.
EMP—200. Last fiscal year output 133,000 tons.

Arjay Mine, Drift, Straight Creek Seam, 40 to 60 in. thick.
PO—Arjay, Ky. SP—Same. CTY—Bell. RR—L. & N., Left Fork Branch.
MS—H. M. Stokes,..Straight Creek, Ky.
SM—W. H. Simpson, ... Arjay, Ky.
S of H—2 gasoline locos. and mules.
S of M—Hand.
PP—1 pump.
EMP—200. Last fiscal year output 128,392 tons.

Wallsend Mine, Drift, Straight Creek Seam, 24 to 48 in. thick.
PO—Wallsend, Ky. SP—Same. CTY—Bell. RR—L. & N., Cumberland Valley Branch.
MS—W. L. Stallsworth,. Wallsend, Ky.
SM—W. H Price. " "
S of H—4 elec. loco. Track gauge 36 in.
S of M—5 elec. mach.
PP—return tubular boilers, total 375 H.P., 2 gen. units, 250 volts D. C., 3 pumps.
EMP—80. Last fiscal year output 38,000 tons.

Barker Mine, Drift, Straight Creek Seam, 40 to 48 in. thick.
PO—Straight Creek, Ky. SP—Same. CTY—Bell. RR—L. & N., Left Fork Branch.
MS—H. M. Stokes, Straight Creek, Ky
SM—A. D. Meadows, " "
S of H—7 elec. loco. Track gauge 42 in.
S of M—7 elec. and 25 comp. air mach.
PP—4 return tubular boilers, total 600 H.P., 2 gen. units, 250 volts D. C., 1 compressor.
EMP—300. Last fiscal year output 187,421 tons.

CONTINENTAL FUEL CO.
See Victor Fuel Co.

COOKE-JELLICO COAL CO.
Succeeded by Perkins Coal Co.

CORYDON COAL CO.
Corydon Mine, Shaft, No. 12 Seam, 4 ft. 8 in. to 5 ft. 4 in. thick.
PO—Corydon, Ky. SP—Same. CTY—Henderson. RR—I. C.
PR—T. L. Jones, ... Corydon, Ky.
TR—T. E. Jones, " "
GM—T. E. Jones, " "
GS—T. E. Jones, " "
PA—T. E. Jones, " "
EM—Wm. Richardson, " "
S of H—Mules and 1 comp. air loco. Track gauge 42 in.
S of M—Hand and 7 comp. air mach.
PP—2 boilers, total 250 H. P., 7 air compressors and 1 pump.
EMP—50. Last fiscal year output 30,000 tons. Sales Mgr., T. E. Jones.

CRABTREE COAL MINING CO.
Crabtree Mine; Drift; No. 9 Seam, 66 in. thick.
PO—Ilsley, Ky.; SP—Same; CTY—Hopkins; RR—Ill. Cent., Louisville Div.
PR—Edward Ilsley, ..Philadelphia, Pa.
GM—R. M. Salmon, ...Ilsley, Ky.
TR—R. M. Salmon, " "
GS—R. M. Salmon, " "
PA—R. J. Salmon, " "
MS—R. J. Salmon, " "
EM—John Harland, " "
MM—Louis Leasure, " "
EE—Charley Martin, " "
SCO—Address the Company.
S of H—1 Steam and 3 elec. loco.
S of M—13 Comp. air mach.
PP—9 Return tubular boilers, 1 compressor, 3 pumps.
EMP—225. Last fiscal year output 100,000 tons.

CRESCENT COAL CO.
General Office, Nashville, Tenn.
Crescent Mine, Shaft, W. Kentucky No. 9 Seam, 5 to 6 ft. thick.
PO—Bevier, Ky. SP—Same. CTY—Muhlenberg. RR—L.&N., O.&N. Div.
PR—W. B. Cole, ... Nashville, Tenn.
VP—Wm. H. Lindsay..Nashville, Tenn.
TR—F. P. Wright, ... Bevier, Ky.
SEC—F. P. Wright, " "
GM—F. P. Wright, " "
PA—F. P. Wright, " "
MS—F. P. Wright, " "
MM—W. W. Graham, " "
CE—Frank S. Washburn, Nashville, Tenn
SCO—Crescent Coal Co. Buyer, Jno. L. Faughender, Bevier, Ky.
S of H—Mules and 3 elec. loco. Track gauge 36 in.
S of M—10 elec. chain breast mach.
PP—4 return tubular boilers, total 600 H. P., 2 gen. units, 250 volts D.C., 4 pumps.
EMP—250. Last fiscal year output 257,000 tons.

CRITTENDON COAL & COKE CO.
PO—Sturgis, Ky. SP—Same. CTY—Union. No report.

CRYSTAL COAL CO.
Luke and Drummond Mines; Shaft; L. Hignite Seam, 42 to 50 in. thick. Operate Washery.
PO—Logmont, Ky.; SP—Ellwood, Ky.; CTY—Bell.
PR—L. C. Gunter.....Knoxville, Tenn.
VP—R. E. Howe.....Shamrock, Ky.
GM—R. E. Howe, " "
S of H—2 Elec. loco.
S of M—4 Elec. mach.
PP—3 Water tube boilers, 250 H. P., 1 gen. unit, 250 volts D. C.

CUMBERLAND CANNEL COAL CO.
General office, Lex, W. Va.
One Mine in Kentucky and 1 Mine in West Virginia.
PO—Wallins Creek, Ky; SP—Same; CTY—Harlan.
PR—James P. Flanagan..Lex, W. Va.
TR—J. H. Henchey, " "
GM—J. B. Miller, " "
GS—Thos. Flanagan, Wallins Creek, Ky.
EM—G. J. Cooper.....Lex, W. Va.
S of H—Mules.
S of M—Hand.
EMP—30.
Sales Agent, J. H. Henchey, Lex, W. Va.

CUMMINGS & DAY.
PO—Deanefield, Ky. Not shipping coal at present.

DAVIS COAL CO.
General Office, ... Jackson, Ky
PR—R. T. Davis, " "
TR—M. Needham, " "
GM—R. T. Davis, " "
GS—R. T. Davis, " "
PA—Hugh Needham, " "
CE—W. S. Canning, " "
EM—W. S. Canning, " "
SCO—Sewell Ford & Co., " "
Buyer, Hugh Needham,.. Jackson, Ky.

DAVYS RUN COAL CO.
Succeeded by Harbison Walker Refractories Co.

DEAN COAL CO.
General Office, Jellico, Tenn.
PO—Artemus, Ky ; SP—Myricks, Ky., via Artemus; CTY—Knox; RR—Cumberland.
PR—H. W. Sanford....Knoxville, Tenn.
VPR—A. B. Day, " "
TR—James F. MacPherson, Jellico, Tenn.
GM—James F. MacPherson, " "
PA—James F. MacPherson, " "
MS—Jonathan Jenkins....Artemus, Ky.
S of H—Mules.
S of M—Goodman elec. mach.
PP—Gen. unit 250 volts D. C., 75 K. W.
EMP—75

DEAN JELLICO COAL CO.
See R. C. Tway Mining Co.

DIAMOND COAL CO.
Diamond Mine; Drift; No. 9 Seam, 4½ to 5 ft. thick.
PO—Providence, Ky. SP—Upland, Ky. CTY—Webster. RR—L. & N., Morganfield Branch.
PR—R. L. Jackson, .. Providence, Ky.
GM—S. D. Palmer, " "
GS—S. D. Palmer, " "
PA—S. D. Palmer, " "
SM—J. Hardy Cullen, " "
MS—S. C. Loften, " "
EM—M. C. Palmer, " "
MM—Henry Daris, " "
S of H—Rope and comp. air. Track gauge 42 in.
S of M—12 Comp. air mach.
PP—2 return tubular boilers, total 300 H.P., 1 haulage engine, 1 air comp. and 1 pump.
EMP—125. Last fiscal year output 84,000 tons. Sales Agent, J. E. Palmer.

DIXIE COAL CO.
Dixie Mine; Drift; Blue Gem Seam, 22 to 30 in. thick.
PO—Gatliff, Ky.; SP— Same; CTY—Whitley; RR—L. & N.
PR—Sol L. Smith....Williamsburg, Ky.
TR Sol L. Smith, " "
GM—Sol L. Smith, " "
GS—H. N. Hill.....Gatliff, Ky
MS—H. N. Hill, " "
EM—A. Stott. " "
SCO—Address the Company " "
S of H—Mules.
S of M—Hand.
NOTE—Just started to ship coal June 25.

DOUGLASS COAL MINING CO.
PO—Douglass, Ky.; SP—Racoon, Ky.; CTY—Perry; RR—L. & N.
Successor to the Raccoon Coal Co.
No report.

DRURY COAL CO.
See Waverly Coal Co.

DRAKE BLUE GEM COAL CO.
Drift Mine; Blue Gem Seam, 26 to 30 in. thick.
PO—Packard, Ky.; SP—Newisdale, Ky., (prepay); CTY—Whitley; RR—L. & N., Pine Mt. Br.
PR—John Goins.....Packard, Ky.
GM—John Goins, " "
TR—T. J. Roberts, " "
GS Archie Stott, " "
EM—Archie Stott, " "
S of H—Mules.
S of M—Hand.
EMP—50. Last fiscal year output, 20,000 tons.
Sales Agency, Southern Coal & Coke Co., Knoxville, Tenn.

DUNCAN, W. G., COAL CO.
General Office, Greenville, Ky.
PR—W. G. Duncan, .. Greenville, Ky.
TR—A. W. Duncan.....Greenville, Ky.
GM—C. W. Taylor, " "
PA—C. W. Taylor, " "
EM—W. G. Duncan, Jr., " "
CE—D. W. Christian, " "
MM—D. W. Christian, " "

Graham, Skibo and Luzerne Mines; Slopes and Drifts; No. 9 Seam, 57 to 66 in. thick.
PO—Luzerne and Graham, Ky.; SP—Same CTY—Muhlenberg.
S of H—8 Elec' loco. track gauge 39 in.
S of M—30 Elec. mach.
PP—7 Return tubular boilers, total 1,050 H. P., 2 gen. unit, 2,500 volts A. C., 3 phase, 60 cycles, 10 pumps.
EMP—750. Last fiscal year output 500,000 tons.

EAGLE COAL CO.
Receiver, D. W. Jones, 524 Colo. Savings & Trust Bldg., Columbus, O.
Barren Fork Mine.
PO—Barren Fork, Ky.; SP—Same; CTY—McCreary.
MS—J. W. Burriss....Barren Fork, Ky.
Note—Not operating since Dec. 17, 1914.

EAST FORK COAL CO.
Sturgell Mine; Drift; No. 7 Seam, 24 to 72 in. thick.
PO—Princess, Ky.; SP—Same; CTY—Boyd; RR—A. C. I.
PR—J. D. Sturgell.....Princess, Ky.
GM—J. D. Sturgell, " "
MS—J. D. Sturgell, " "
TR—Lilie Sturgell, " "
EM George Stevens, " "
S of H—Mules.
S of M—Hand.
PP— 1 Pump.
Sales Agency, Kentucky Gem Coal Co., Rush, Ky.

EAST JELLICO COAL CO.
East Jellico Mines; Drift; Dean Seam, 5 to 7 ft. thick.
PO—Tinsley, Ky.; SP—Surran Ky.; CTY—Bell; RR—L. & N.
PR—A. G. Corbett.....Clarion, Pa.
TR—C. W. Bell, " "
GM—M. G. Yingling....Lexington, Ky.
GS—J. D. Maisee.....Tinsley, Ky.
PA—J. D. Maisee, " "
MM—J. C. King, " "
EE—J. C. King, " "
SM—J. M. Warren, " "
CE—H. M. Yeager.....Pineville, Ky.
S of H—3 Elec. loco. and mules; track gauge 40 in.
S of M—1 Elec. mach and hand.
PP—2 Return tubular boilers total 350 H. P., 1 gen. unit 250 volts D. C., 1 comp.
EMP—200. Last fiscal year output 120,000 tons.
Sales Agent, M. G. Yingling, Lexington, Ky.

EAST KENTUCKY COAL CO.
General Office, Fisher Bldg., Chicago, Ill.
Crystal Block Mine, Drift; Peach Orchard Seam, 72 in. thick.
PO—Peach Orchard, Ky.; SP—Richardson, Ky.; CTY—Lawrence; RR—C. & O.
PR—C. O. Gent, Fisher Bldg., Chicago, Ill.
TR—H. L. Jones, Fisher Bldg., Chicago, Ill.
GS—C. F. Lowther, Richardson, Ky.
PA—C. F. Lowther, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—50. Output 20,000 tons.
Note—Successors to the Crystal Block Collieries Co.

EAST TENNESSEE COAL COMPANY.
..General Office, Knoxville, Tenn.
Glomawr Mine; Drift; Seam 50 to 60 in. thick.
PO—Glomawr, Ky.; SP—Same; CTY—Perry; RR—L. & N.
PR—Howell J. Davis....Knoxville, Tenn.
TR—Howell J. Davis, " "
GM—W. E. Davis.....Glomawr, Ky.
MS—W. L. Potter, " "
PA—H. Monholland, " "
SM—W. E. Davis.....Hazard, Ky.
SCO—East Tennessee Coal Co., Buyer, H. Monholland, Glomawr, Ky.
S of H—Elec. loco.; track gauge 42 in.
S of M—Elec. mach.
PP—2 Boilers, total 300 H. P.
Note—Developing.

EASTERN KENTUCKY BLOCK COAL & FUEL CO.
Peacock Mine; Drift; Up Elkhorn Seam, 36 to 66 in. thick.
PO—Praise, Ky.; SP—Elkhorn City, Ky.; CTY—Pike; RR—C. C. & O.
PR—W. O. Brothers.....Praise, Ky.
GM—W. O. Brothers, " "
TR—H. V .Brothers, " "
MS—O. B. Shabert, " "
PA—F. G. Craig, " "
EM—N. O. Raney, " "
SCO—R. T. Elswick, " "
S of H—Mules.
NOTE—Building Tipple Driving entres June 14, 1915.

EASTERN KENTUCKY COAL CO., (THE)
General Office, Mount Vernon, Ohio.
Louisa Mine; Drift; Seam 48 in. thick. thick.
PO—Torchlight, Ky., SP—Same, CTY—Lawrence, RR—C. & O., Big Sandy Dit.
PR—F. S. McConnell..Mt. Vernon, O.
TR—E. H. Fairchild, " "
GM—F. S. McConnell, " "
GS—C. L. Walkenshaw, Torchlight, Ky.
PA—C. L. Walkenshaw, " "
SCO—Eastern Kentucky Coal Co., Buyer, Carl Compton, Torchlight, Ky.
S of H—4 Elec. loco. track gauge 36 in.
S of M—6 Elec. machines.
PP—2 Union Iron Works return tubular boilers, total 150 H. P.
unit 250 volts D. C., 1 pump.
EMP—100.

ELK COAL CO.
See Corum & Parker.

ELKHORN COAL CO.
Kona Mine; Elkhorn Seam, 58 to 66 in. thick.
PO—Mater, Ky.; SP—Kona, Ky.; CTY—Letcher; RR—Lexington & Eastern.
PR—S. L. Bastin, Lexington, Ky.
TR—J. Henry Hall, Mater, Ky.
GM—J. Henry Hall, " "
MS—J. Henry Hall, " "
S of H—Mules.
S of M—Hand.
EMP—100
Output estimated to be 75,000 tons annually.

ELKHORN CONSOLIDATED COAL & COKE CO..
Lower and Upper Elkhorn and Coaldale Mines; Drift; L. & Up. Elkhorn Seam; 46 to 48 in. thick.
PO—Hellier, Ky.; SP—Same; CTY—Pike. RR—C. & O.
PR—Lon Rogers.....Pikeville, Ky.
TR—Lon Rogers, " "
GM—Lon Rogers, " "
PA—Lon Rogers, " "
MS—Lon Rogers, " "
VP—J. L. Rogers.....Greenville, Ky.
CE—Edward Holly.....Pikeville, Ky.
MM—Jos. B. Rogers, " "
EE—Ed Chinn, " "
S of H—2 Elec. loco. and mules; track gauge 48 in.
S of M—5 Elec. mach.
PP—Boilers 225 H. P., 1 gen. unit 250 volts D. C.
Coke ovens 60 Bee Hive. Last fiscal year output 162,348 tons. Sales Agency, Matthew Addy & Co., Cincinnati, O.

ELKHORN GAS COAL MINING CO.
General Office, Milwaukee, Wis.
PO—Weeksburg, Ky.; CTY—Floyd.
MS—C. C. Dunn.....Weeksburg, Ky.
Have not started mining for the market on account of lacking railway facilities.

ELK HORN MINING CORP.
General Office, New York, N. Y.
PR—C. W .Watson....New York, N. Y.
PA—G. S. Kinzer.....Wayland, Ky.
Chief Eng—H. S. Estill, " "
CE—Frank Haas.....Fairmont, W.Va.
EE—E. Hutton.....Fleming, Ky.
Sales Agency, Consolidation Coal Co., New York, N. Y.

Nos. 301, 302, 307 Mines; Drifts, Elk Horn; Seam 60 to 144 in. thick.
PO—Fleming, Ky.; SP—Same; CTY—Letcher; RR—Lexingon & Easern.
GM—(Mineral Div.) Thomas O. Haymond and R. F. Cole.....Fleming, Ky.
MS—J. C. Babb, " "
S of H—6 Elec. loco.; track gauge 42 in.
S of M—5 Elec. mach.
PP—Gen. units A. C., 3 phase, 60 cycles; 4 pumps; power purchased.

Nos. 303, 304, 305, 306 Mines; Drifts; Elk Horn Seam, 60 to 144 in. thick.
PO—Fleming, Ky.; SP—(303-304) Haymond, Ky.; (305-306) Hemphill, Ky.; CTY—Letcher; RR—Lexington & Eastern.
GM—(Beaver Div) H. S. Carpenter, Wayland, Ky.
MS—M. B. Mitchell.....Fleming, Ky.
S of H—8 Elec. loco.; track gauge 42 in.
S ofM—7 Elec. mach.
PP—Gen. units a. c., 3 phase, 60 cycles; 8 pumps; power purchased.
EMP——Total 500.
Successors to the Mineral Fuel Co.

ELKHORN & SHELBY CREEK COAL CO.
General Office, Jenkins, Ky.
Caney Mine, Drift, Up and L. Elkhorn Seam, 8 ft. 4 in. thick.
PO—Penny, Ky.; SP—Same; CTY—Pike; RR—Sandy Valley and Elkhorn.
PR—C. G. Evans,.....Jenkins, Ky.
TR—A. L. Bennett, " "
GM—W. J. Christopher, Penny, Ky.
S of H—1 Elec. loco. and mules; track gauge 48 in.
S of M—Elec. mach.
PP—1 Erie boiler, 100 H. P., gen. unit 250 volts D.C.
Will have a daily output of 700 tons.

EMPIRE COAL CO.
Empire Mine; Shaft.
PO—Empire, Ky.; SP—Empire, Ky.; CTY—Christian; RR—L. & N.
PR—W. T. Rutland.....Empire, Ky.
GM—A. V. Rutland, " "
Secy—N. M. Rutland, " "
S of H—Mules.
S of M—Elec.
PP—2 boilers, gen. units, 250 volts D. C.
EMP—125.

EUREKA COAL CO.
Blue Gem Mine; Drift; Blue Gem Seam, 24 to 30 in. thick.
PO—Gatliff, Ky.; SP—Same; CTY—Whitley; RR—L. & N., Pine Mt. Br.
PR—W. N. Woodward....Jellico, Tenn.
TR—Chas. Hughes, " "
GM—F. M. Angel.....Gatliff, Ky.
PA—F. M. Angel, " "
MS—F. M. Angel, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—25.

FAIRMONT MINING COMPANY.
Fairmont Mine, Drift, No. 9 Seam, 4½ to 5 ft. thick.
PO—Blackford, Ky. SP—Wheat Crop, Ky.; CTY—Webster. RR—Illinois Central, Providence Br.
Continued on Next Page.

PR—W. F. Shinall,....Blackford, Ky.
GM—W. F. Shinall, " "
PA—W. F. Shinall, " "
TR—Luke Mitchel, " "
MS—Luke Mitchel, " "
MM—W. B. Barnes, " "
S of H—Rope; track gauge 36 in.
S of M—1 Elec. mach.
PP—1 water tube boiler, 100 H. P., 2 gen. units, 250 volts, D. C.; 1 pump.
EMP—32. Last fiscal year output 13,000 tons. Sales agent, W.F. Shinall, Blackford, Ky.

FERNDALE COAL CO., THE
Ferndale Mine, Drift, "Barner" Seam, 36 in. thick.
PO—Ferndale, Ky. SP—Same. CTY—Bell; RR—L. & N.
PR—J. E. Adair.. ..Ferndale, Ky.
GM—J. E. Adair, " "
PA—J. E. Adair, " "
TR—J. E. Adair, " "
GS—W. M. Cole, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—1 pump.
EMP—40. Last fiscal year output 15,000 tons.

FLOYD MINING CO.
Cedar Point Mine; Drift, No. 3 Miller Creek Seam.
PO—Emma, Ky.; SP—Woods Station, Ky.; CTY—Floyd; RR—C. & O.
GM—Henry L. Coe,.....Emma, Ky.
MS—Thomas Osey, " "
MM—John Ham, " "
SCO—Address the Company.
S of H—Mules; track gauge 43 in.
S of M—2 Elec. mach.
PP—1 Randall boiler, 40 H.P.
EMP—25. Output 200 tons per day.

FLUHART COLLIERIES CO. (THE)
General Office, 1113-1115 U. B. Bldg., Dayton, Ohio.
White House No. 1 Mine, Shaft, Kentucky No. 1 Seam, 36 to 44 in. thick.
PO—White House, Ky.; SP—Same; CTY—Johnson; RR—C. & O., Big Sandy Branch.
PR—Theo. Fluhart.....Dayton, Ohio
TR—J. W. Chandley, " "
GM—J. W. Chandley, " "
PA—J. T. Powell.....White House, Ky.
MS—J. T. Powell, " "
SM—T. J. Powell, " "
EM—Edward Holly.....Pikeville, Ky.
S of H—2 Elec. loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—3 Return tubular boilers, total 375 H. P., 2 gen. units, 350 volts D. C.
EMP—125 Last fiscal year output 75,000 tons. Sales Agent, J. W. Chandley, Dayton, O.

FORSYTHE, R. L.
Out of business.

FOUR MILE COAL CO.
Nos. 1, 4 and 5 Mines; Drifts; Straight Creek and Hickory Seams, 68 to 72 in thick.
PO—Rim, Ky.; SP—Four Mile, Ky.; CTY—Bell; RR—L. & N., C. V. Div.
PR—W. R. Wood.....Rim, Ky.
GM—W. R. Wood, " "
PA—W. R. Wood, " "
GS—W. R. Wood. " "
EM—Culton & Bailey, Pineville, Ky.
S of H—3 Elec. loco.; track gauge, 44 in.
S of M—7 Elec. mach.
PP—3 Return tubular boilers, 300 H. P., 2 gen. units, 250 volts D. C.
EMP—150. Last fiscal year output, 200,000 tons.
Sales Agency, Continental Coal Corp., Chattanooga, Tenn.

FROST, I. N.
(Lessee of the West Jellico Mine).
PO—Silerville, Ky.; CTY— McCreary.
No report.

GATLIFF COAL CO.
PR—A. A. Gatliff....Williamsburg, Ky.
TR—N. B. Perkens, " "
GM—J. B. Gatliff, " "
MS—Edw. Jones.....Gatliff, Ky.
MM—Wm. Oliver, " "
S of H—Gasoline and ele.
S of M—Air and electricity.
PP—6 150 H. P. return tubular boilers, 2 compressors and 1 250 elec. unit.
EMP—About 400. Last fiscal year output about 150,000 tons.

GEARY LAND & DEVELOPMENT CO.
Closed mines permanently. Property for sale.

GENTRY, TOM
Old Standard Mine.
PO—Viva, Ky.; CTY—Laurel.
No report.

GIBRALTAR COAL MINING CO.
General Office, Memphis, Tenn.
Gibraltar Mine; Shaft; No. 9 Seam, 56 to 64 in. thick.
PO—Mercer, Ky.; SP—Same; CTY—Muhlenberg; RR—I. C.
PR—Robt. L. Brown, Memphis, Tenn.
TR—Robt. L. Brown, " "
GM—J. A. Smith, ...Mercer, Ky.
MM—J. O. Wallace, " "
SCO—Gilbratar Store, " "
S of H—2 Elec. loco.; track gauge 36 in.
S of M—10 Elec. mach.
PP—4 C. J. Walton boilers, total 600 H.P., 2 gen. unit 450 K.W.; 1-250 volts D.C.
EMP—365. Last fiscal year output 200,028 tons.
Sales Agency, Brown Coal Co., Memphis, Tenn.

GENERAL REFRACTORIES CO.
Drift Mine No. 3 Seam, 36 in. thick.
PO—Hitchins, Ky.; SP—Same; CTY—Carter; RR—C. & O., Lexington Div.
PR—W. C. Sproul.....Chester, Pa.
GS—Clayton S. Hitchins, Hitchins, Ky.
EM—H. C. Stulting.....Hitchins, Ky.
MM—E. C. Williams, " "
EE—E. C. Williams, " "
S of H—Mules and 1 Elec loco.; track gauge 39 in.
S of M—Hand and 1 elec. mach.
PP—1 Rust water tube boiler, 350 H. P., 1 gen. unit, 480 volts A. C.
EMP—50. Last fiscal year output 35,000 tons.

GOLDEN ASH COAL CO.
General Office, Williamsburg, Ky.
Golden Ash Mine; Drift; Harlan Seam, 42 to 52 in. thick.
PO—Kitts, Ky. SP—Neubert, Ky. CTY—Harlan, RR—L. & N., Wasiotc & Black Mtn. Div.
PR—T. B. Mahan....Williamsburg, Ky.
TR—A. V. Brown, " "
GM—J. L. Smith.....Kitts, Ky.
PA—J. L. Smith, " "
S of H—Mules and 2 Elec. loco.; track gauge 44 in.
S of M—Hand and 2 Elec. mach.
EMP—60. Sales Agency, Southern Coal & Coke Co., Knoxville, Tenn.

GREASY CREEK COAL CO.
Greasy Creek Mine, Drift, Dean Seam, 6 to 7 ft. thick.
PO—Tinsley, Ky., SP—Surran, Ky., CTY—Bell. RR—L. & N., Pine Mountain Branch.
PR—R. B. Baird.....Tinsley, Ky.
TR—C. O. Baird, " "
GM—H. L. Baird, " "
PA—H. L. Baird, " "
CE—H .E. Taylor.....Harlan, Ky.
EM—H. E Taylor, " "
SM—H. L. Baird.....Tinsley, Ky.
S of H—Mules; 1 comp. air loco., track gauge 40 in.
S of M—11 comp. air machines.
PP—1 200 H. P. return tubular boiler, 1 air comp. and 2 pumps.
EMP—100. Last fiscal year output 43,380 tons Sales Agency, Kentucky Southern Coal Co., Louisville, Ky.

GREENOUGH COAL & COKE CO.
General Office, Shamokin, Pa.
Greenough Mine, Drift, Upper Elkhorn Seam 32 to 64 in. thick.
PO—Hellier, Ky., SP—Same, CTY—Pike; RR—C. & O., Marrowbone Br.
PR—Edward Brenman....Shamokin, Pa.
TR—K. C. McWilliams, " "
GM—W. J. Freeman.....Hellier, Ky.
GS—W. J. Freeman, " "
EM—Edward Holly.....Pikeville, Ky.
SCO—Greenough Store, Buyer, R. G. Wells, Hellier, Ky.
S of H—Mules and comp. air loco.; track gauge 40 in.
S of M—11 Comp. air mach.
PP—1 Atlas water tube boiler, 1 compressor.
EMP—60. Last fiscal year output 34,605 tons. Sales Agency, Eaton, Rhodes & Co., Cincinnati, Ohio.

GREEN RIVER COAL CO.
Klondike Mine, Drift, No. 9 Seam, 3½ to 5 ft. thick.
PO—Livermore, Ky., SP—Same, CTY—McLean; RR—Green River.
PR—Ed. Austin.....Livermore, Ky.
TR—D. H. Boyken, " "
GM—D. H. Boyken, " "
MS—D. H. Boyken, " "
S of H—Mules; track gauge 38 in.
S of M—Hand.
PP—2 Boilers, total 110 H. P.
EMP—8. Last fiscal year output 3,000 tons

GREEN RIVER COAL & COKE CO.
Green River Mine, Shaft, No. 9 Seam, 4 ft. 2 in. to 4 ft. 9 in. thick.
PO—Island, Ky., SP—Same, CTY—McLean; RR—L. & N., Owensboro & Nashville Div.
PR—John W. Love.....New York City.
TR—E. S. Randle.....Island, Ky.
GM—E. S. Randle, " "
PA—E. S. Randle, " "
GS—Thos. Blades, " "
SM—J. S. Mattingly, " "
S of H—Mules, tail rope and 1 gasoline motor.
S of M—Hand.
PP—3 return tubular boilers, total 180 H. P., 3 pumps.
EMP—140. Last fiscal year output 90,000 tons. Sales Agent, A. C. Lackey, Nashville, Tenn.

GREENVILLE COAL CO.
General Office, Greenville, Ky.
PR—W. A. Wickliffe....Greenville, Ky.
TR—M. L. Wickliffe, " "
GM—C. M. Martin, " "
GS—C. M. Martin, " "
PA—C. M. Martin, " "
EM—P. R. Wickliffe, " "
EE—P. R. Wickliffe, " "
Sales Mgr., W. A. Wickliffe, Greenville, Ky.

Powderly Mine, Slope, No. 9 West Kentucky Seam, 4 ft. 8 in. to 5½ ft. thick.
PO—Powderly, Ky.; SP—Same, CTY—Muhlenberg; RR—Illinois Central.
MS—Herbert Myers.....Powderly, Ky.
EE—Claud Mercer.....Powderly, Ky.
SM—H. C. Willis, " "
S of H—Mules and 1 elec. loco.; track gauge 36 in.
S of M—9 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 1 3-phase 60-cycle motor gen. set, 2300 volts A. C., 3 pumps.
EMP—200. Last fiscal year output 154,917 tons.

Martwick Mine, Shaft, No. 9 West Kentucky Seam, 4 ft. 5 in. to 5 ft. thick.
PO—Martwick, Ky., SP—Same, CTY—Muhlenberg; RR—Illinois Central.
MS—A. J. Mercer.....Martwick, Ky.
SM—A. C. Howard, " "
EE—C. Carl Coots.....Martwick, Ky.
S of H—Mules, 1 elec. loco., track gauge 42 in.
S of M—11 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—174 Last fiscal year output 141,941 tons.

HAMMONDS, GEO.
Hammond Mine, Drift, No. 7 Seam 3 to 4 ft. thick.
PO—Coalton, Ky.; SP—Same; CTY—Boyd; RR—A. C. & V.
PR—Geo. W. Hammond,..Coalton, Ky.
GM—Geo. W. Hammond, " "
PA—Geo. W. Hammond, " "
EM—Joe. L. Simpson, .. Kilgore, Ky.
S of H—Mules. Track gauge 3 ft 7½ in.
S of M—Hand.
EMP—20. Last fiscal year output 12,000 tons. Sales agent, Big Run Coal Co., Winchester, Ky.

HARBISON-WALKER REFRACTORIES CO.
2 Mines in Penna. 1 Mine in Kentucky.
General Office, Farmers Bank Bldg., Pittsburgh, Pa.
Drift Mine, No. 7 Seam, 36 in. thick.
PO—Denton, Ky.; SP—St. Creek Mines, Ky.; CTY—Carter RR—C. & O.
PR—H. W. Croft.....Pittsburgh, Pa.
GM—H. W. Croft, " "
TR—Wm. Walker, " "
PA—C. T. Stewart, " "
Successors to the Davys Run Coal Co.

HARLAN GAS COAL CO.
Gastom Mine; Seam 48 to 58 in. thick.
PO—Harlan, Ky.; SP—Gastom, Ky.; CTY—Harlan; RR—L. & N.
PR—E. B. Cornett, ...Harlan, Ky.
GS—W. B. Miller, " "
PA—Carlo Cawood, " "
GM—J. L. Williams, ...Coxton, Ky.
S of H—4 Elec. loco.; track gauge 42 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, total 300 H.P., 1 gen. unit 250 volts D.C.
EMP—250. Last fiscal year output 150,000 tons.
Successors to the Harlan Town Coal Co.

HARLAN TOWN COAL CO.
Now Harlan Gas Coal Co.

HAZARD COAL CO.
General Office, Louisville, Ky.
Drift Mine; No. 4 Seam, 40 to 48 in. thick.
PO—Hazard, Ky.; SP—Same; CTY—Perry; RR—L. & N.
PR—Robt. Widekind, ..Louisville, Ky.
TR—W. G. Polk, " "
GM—W. G. Polk.....Louisville, Ky.
GS—John P. Gorman, Jellico, Tenn.
PA—J. L. Slusher.....Jellico, Tenn.
EM—G. D. Cummings, " "
MM—A Lavely, " "
MS—P. F. Gorman.....Hazard, Ky.
S of H—Mules.
S of M—12 Comp. air mach.
PP—2 Return tubular boilers, total 250 H. P., 1 comp. and 1 pump.
EMP—150. Last fiscal year output 50,000 tons.
Sales Agent, W. G. Polk.

HAZARD-DEAN COAL CO.
Sold to Blue Grass Coal Corp.

HERCULES COAL CO.
Hercules; Shaft; No. 11 Seam, 4½ to 5 ft. thick.
PO—Morganfield, Ky.; SP—Same; CTY—Union; RR—I. C., L. & N.
PR—W. A. Jackson....Evansville, Ind.
GM—R. C. Arnold.....Waverly, Ky.
TR—R. F. Beasen.....Morganfield, Ky.
MS—H. C. Williamson, " "
PA—H. C. Williamson, " "
EM—D. E. Coulton, " "
MS—R. B. Eastin, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Water tube boilers each 150 H. P., 4 pumps.
EMP—35. Sales Agent, F. J. Kennedy, Morganfield, Ky.

HIGHLAND MINING COMPANY.
Highland Mine, Slope; No. 9 Seam; 5 ft. to 5 ft. 4 in. thick.
PO—Providence, Ky.; SP—Same; CTY—Webster; RR—I. C.
PR—A. J. Ruckman..Las Esperanzas Mex.
TR—A. J. Ruckman, " "
GM—F. V. Ruckman...Providence, Ky.
GS—E. B. Robinson, " "
PA—E. B. Robinson, " "
MS—Carl Ramsey, " "
EM—Thos. O. Long, " "
MM—J. Aldridge, " "
SCO—Ruckman Store Co., Buyer J. B. Simpson, Providence, Ky.
S of H—Mules, rope and 1 gasoline loco., track gauge 42 in.
S of M—Hand.
PP—2 Titusville return tubular boilers, total 225 H. P., 1 pump.
EMP—187. Last fiscal year output 168,700 tons.
Sales Agent, Southern Coal Co., Memphis, Tenn.

HIGNITE COAL MINING CO.
Hignite Mine; Drift; Hignite Seam, 48 in. thick. Operate Washery.
PO—Middlesboro, Ky.; SP—Same CTY—Bell; RR—L. & N.
PR—John Hoffman.....Covington, Ky.
TR—E. S. Helburn....Middlesboro, Ky.
GM—E. S. Helburn, Middlesboro, Ky.
EM—C. P. Davidson....Middlesboo, Ky.
PA—W. W. Oakes.....Shamrock, Pa.
MS—N. L. Reynolds, " "
SM—Green Turner, " "
S of H—2 Elec. loco. and mules; track gauge 44 in.
S of M—2 Elec. mach.
PP—2 Return tubular, Houston, Stanwood & Gamble boilers 275 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—100. Last fiscal year output 98,000 tons. Sales Agent, E. S. Helburn, Middleboro, Ky.

HILL, H D.,
Hill Mine.
PO—Providence, Ky.; SP—Same, CTY—Webster.
No report.

HILLSIDE COAL CO.
Hillside and Oakland Mines.
PO—Hillside, Ky.; SP—Same; CTY—Muhlenberg; RR—I. C.
PR—J. W. Lam, ...Hillside, Ky.
MS—Andrew Hogg, " "
S of H—1 Elec. loco.
S of M—4 Elec. mach.
NOTE—Hillside Mine idle at present, will probably start in the fall.

HIMYAR COAL CORPORATION.
General Office, Lexington, Ky.
Himyar and Domino Mines; Drifts; Haddix or No. 6 Seam, 65 to 84 in. thick.
PO—Domino, Ky.; SP—Same; CTY—Perry; RR—L. & E.
PR—Louis Des Cognets...Lexington, Ky.
TR—L. C. Durickson, " "
GM—W. L. Carter.....Domino, Ky.
PA—W. L. Carter, " "
MS—W. L. Carter, " "
EM—W. L. Carter, " "
EE—W. L. Carter, " "
SM—I. S. Watts.....Hazard, Ky.
S of H—Mules; rack gauge 42 in.
S of M—6 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 2 gen. units, 550 volts D. C. and 4 pumps.
EMP—250. Output from Aug. to Dec., 1914, 55,200 tons.

HOLT COAL CO. (THE)
Holt Mine; Shaft; No. 9; 5 to 6 ft. thick.
Continued on Next Page.

HOLT COAL CO.—CONTINUED.
PO—Central City, Ky.; SP—Cleaton, Ky.; CTY—Muhlenberg; RR—L. & N., O. & N. Div.
PR—W. F. Holt.....Philipsburg, Pa.
VP—B. B. Holt.....Central City, Ky.
TR—E. W. Holt, " "
GS—E. W. Holt, " "
Secy—N. A. Holt, " "
SM—B. B. Holt, " "
S of H—Mules.
S of M—15 Comp. air mach.
PP—4 return tubular boilers total 500 H. P., 2 air comp. and 1 pump.

HOME COAL CO.
Now Low Ash Mining Co.

HUFFMAN, T. N.
Cloe Creek Mine; Drift; Seam 46 to 52 in. thick.
PO—Pikeville, Ky.; SP—Same; CTY—Pike; RR—C. & O.
GM—F. N. Huffman....Pikeville, Ky.
EM—W. T. Griffith, " "
S of H—Mules; track gauge 40 in.
S of M—Hand.
EMP—9. Last fiscal year output, 2500 tons.

IDEAL BLOCK COAL CO.
In bankruptcy. E. G. Stocksbury, Trustee, Knoxville, Tenn.

IMPERIAL JELLICO COAL CO.
See Magnet Coal Co.

INDEPENDENT COAL CO.
Out of business.

INDIAN CREEK COAL CO.
Indian Creek Mine; Drift; No. 3 Seam, 34 to 44 in. thick.
PO—Indian Head, Ky.; SP—Same; (Prepay); CTY—McCreary;; RR—C. N. O. & T. P., Main Line.
PR—J. S. Cooper.....Somerset, Ky.
TR—J. C. Walker...Indian Head, Ky.
GM—J. C. Walker, " "
PA—W. I. Strunk, " "
EM—J. M. Ramsey....Indian Head, Ky.
EE—George W. Ramsey, " "
MS—J M. Ramsey, " "
S of H—2 Elec.loco., track gauge 36 in.
S of M—4 Elec. mach.
PP—1 return tubular boiler, 150 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—85. Last fiscal year output 46,682.5 tons. Sales Agency, J. C. Walker, Indian Head, Ky.

JELLICO COAL MINING CO.
General Office, Knoxville, Tenn.
Mt. Ash Mine; Drift; Jellico Seam, 32 to 44 in. thick.
PO—Mt. Ash, Ky.; SP—Same; CTY—Whitley; RR—L. & N.
PR—Arthur Groves,...Knoxville, Tenn.
TR—W. J. Everett, " "
GM—E. B. Taylor.....Mt. Ash, Ky.
PA—E. B. Taylor, " "
GS—H. E. Taylor, " "
MS—H. E. Taylor, " "
MM—J. W. Campbell, " "
S of H—5 Elec. loco. and mules; track gauge, 40 in.
S of M—2 Elec. and 20 comp. air machs.
PP—3 Erie City, 1 Jeffrey water tube boilers, total 600 H. P., 2 gen. units, 250 volts D. C., 1 compressor, 4 pumps.
EMP—250. Last fiscal year output, 125,000 tons.

JENKINS COAL CO.
Slope Mine, No. 9 Seam.
PO—Clay, Ky.; SP—Same; CTY—Webster; RR—L. & N.
GM—J. T. Stinman.....Clay, Ky.
PA—N. O. Hunt.....Dixon, Ky
S of H—Mules.
S of M—Hand.
EMP—15.

KENTUCKY BLOCK CANNEL COAL CO.
No. 1 and Brushy Mines; Drift; No. 2 Seam; 28 to 42 in. thick.
PO—Cannel City, Ky.; SP—Same; CTY—Morgan; RR—O. & K.
PR—L. P. Yandell..... Danville, Ky.
TR—S. M. Freese.....Cannel City, Ky.
GM—M. L. Conley....Cannel City, Ky.
PA—M. L. Conley, " "
EM—R. R. Atkins, " "
MM—W. B. Faulkner, " "
MS—E. Rice.....Cannel City, Ky.
SM—Joe F. Reid, " "
S of H—1 Steam loco. and mules; track gauge 42 in.
S of M—24 Comp. air mach.
PP—3 return tubular Erie boilers, total 300 H. P., 2 air comp. and 6 pumps.
EMP—200 Last fiscal year output 55,000 tons. Sales agent, T. B. Morgan, Lexington, Ky.

KENTUCKY COAL & IRON CO
General Office, Chattanooga, Tenn.
Wilborg Mine; Slope; No. 3 Seam, 36 to 48 in. thick.
PO—Flat Rock, Ky.; SP—Wiborg, Ky.; CTY—McCreery; RR—C. N., O. & T. P.
PR—John F. Walter, Flat Rock, Ky.
TR—Lee Cooper, Chattanooga, Tenn.
CE—E. M. Jones, . " "
CM—Chas. M. Walter, Flat Rock, Ky.
MS—J. T. Spradlin, " " "
EM—A. P. Hodges, " " "
EE—L. B. Thurman, " " "
S of H—Mules.
S of M—2 Sullivan machines.
EMP—85. Output 150 to 200 tons daily.

KENTUCKY FIRE BRICK CO., (THE)
Kentucky Fire Brick Mine, Drift, Fire clay only, no coal.
PO—Haldeman, Ky., SP—Same, CTY—Rowan; RR—C.&O., Lexington Div.
PR—J. B. Hammond.....Bolivar, Pa.
TR—L. P. Haldeman....Portsmouth, O.
PA—L. P. Haldeman, " "
GM—H. K. Leighow, . Haldeman, Ky.
GS—B. B. Barracks, " "
SM—D. Leadbetter, " "
S of H—Mules.
S of M—Hand machines.
PP—Power furnished from Brick Plant.
EMP—30. Last fiscal year output 35,000 tons.

KENTUCKY GEM COAL CO.
Kentucky Gem Mine, Drift, No. 7 and 8 Seams; 4 to 6 ft. thick.
PO—Rush, Ky.; SP—Norton Branch, Ky.; CTY—Boyd; RR—A. C. L., and C. & O.
PR—J. C. Hatcher.....Rush, Ky.
GM—J. C. Hatcher, " "
MS—J. C. Hatcher, " "
TR—J. M. Hatcher, " "
PA—W. R. Stewart, " "
EM—J. L. Simpson.....Kilgore, Ky.
SM—F. M. Abrams, " "
S of H—Mules, track gauge 44 in.
S of M—Hand.
EMP—50.

KENTUCKY JEWEL COAL CO.
Kentucky Jewel Nos. 1, 2 and 4 Mines; Drift; Nos. 4 and 7 Seam 36 to 60 in. thick.
PO—Hazard, Ky.; SP—Lothair, Ky.; CTY Perry; RR—L. & N.
PR—H. E. Bullock.....Hazard, Ky.
GM—H. E. Bullock, " "
TR—Chas. Bischoff.....Hazard, Ky.
PA—E. H. Griffiths, " "
MS—Wm. Risden, " "
EM—H. S. Adkins, " "
MM—Philip Tice, " "
EE—A. B. Rogers, " "
S of H—3 Elec. loco. and gravity; track gauge 42 in
S of M—5 Elec. mach.
PP—2 Water tube, Houston, Stanwood & Gamble boilers, total 300 H. P.,2 gen. units, 2300 volts, A. C., 3 phase, 60 cycles, 250 volts D. C.
EMP—125. Last fiscal year output 52,000 tons.
Sales Agency, Kentucky Jewel Coal Co., Des Moines, Ia., Hazard, Ky., and 1502 Fisher Bldg., Chicago, Ill.

KENTUCKY MIDLAND COAL CO.
General Office, Central City, Ky.
Midland Mine, Shaft, No. 9 Seam 4 ft. 6 in. to 5 ft. 2 in. thick
PO—Midland, Ky.; SP—Same; CTY—Muhlenberg; RR—Kentucky Midland Br. Ill. Cent.
PR—E. J. C. Bealer..Cedar Rapids, Ia.
TR—Glenn M. Averill, " "
GM—M. M. Wheeler..Central City, Ky.
PA—M. M. Wheeler, " "
MS—W. L. Hughes. .... Midland, Ky.
SM—W. L. Hughes, " "
EE—J. A. Hess, " "
S of H—Mules and 1 gasoline loco. Track gauge 40 in.
S of M—9 Elec. machines.
PP—2 Brownell return tubular boilers total 300 H. P., 1 gen. unit, 250 volts, D. C., 1 pump.
EMP—165. Last fiscal year output 70,668 tons.
Sales Agent, M. M. Wheeler, Central City, Ky.

KENTUCKY PORTLAND CEMENT COAL CO.
PO—Pine Hill, Ky.; SP—Same; CTY—Rockcastle.
No report.

KENTUCKY-TENNESSEE COAL CO.
General Office, Chattanooga, Tenn.
One Mine inKentucky, 1 Mine in Tennessee.
Mammoth Mine; Drift; Blue Gem Seam, 23 to 30 in. thick.
PO—Gatliff, Ky.; SP—Same; CTY—Whitley; RR L. & N.
PR—J. R. Barnes..Chattanooga, Tenn.
TR—H. B. Bonney, " "
GM—Sol L. Smith..Williamsburg, Ky.
PA—Sol L. Smith, " "
GS—Sol L. Smith, " "
MS—T. H. Rodgers.....Gatliff, Ky.
EM—A. Stott, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—60. Last fiscal year output, 21,000 tons.
Successors to the Mammoth Blue Gem Coal Co.

KEWANEE COAL MINING CO.
Kewanee Mine; Drift; Up. Elkhorn Seam, 4½ to 5 ft. thick.
PO—Kewanee, Ky.; SP—Same; (Prepay) CTY—Pike; RR—C. & O., Big Sandy Div.
PR—O. P. Chatfield....Pikeville, Ky.
GM—O. P. Chatfield, " "
PA—O. P. Chatfield, " "
SM—Chas. B. Wilbur, " "
EM—Amick & Haynes, " "
TR—Mont Williamson....Kewanee, Ky.
MS—Mont Williamson, " "
S of H—Mules; track gauge 44 in.
S of M—Hand.
EMP—50. Last fiscal year output 40,000 tons.

KEYSER COAL CO.
Keyser Mine; Drift; Elkhorn Seam, 60 to 64 in. thick.
PO—Mossy Bottom, Ky.; SP—Keyser, Ky.; CTY—Pike; RR—C. & O.
PR—Chas. M. Keyser, Mossy Bottom, Ky.
TR—Chas. M. Keyser, " "
GM—Chas. M. Keyser, " "
GS—J. F. Prindible, " "
CE—J. F. Prindible, " "
MS—Jos. H. Helvey, " "
EE—W. S. Weddington, " "
SCO—Address the Company.
S of H—Mules; track gauge 42 in.
S of M—2 Elec. mach.
PP—2 Erie City boilers, total 300 H.P., 1 gen. unit 250 volts D.C.
EMP—75. Last fiscal year output 57,000 tons.
Sales Agency, Darby Coal & Coke Co., Cincinnati, O.

KIMBLEY COAL CO.
General Office, Trenton, Ky.
Drift Mine; No. 11 Seam, 7 to 8 ft. thick.
PO—Centertown, Ky.; SP—Kronas, Ky.; CTY—Ohio. RR—L. & N.
PR—S. Y. Trimble..Hopkinsville, Ky.
TR—E. J. Ward.....Trenton, Ky.
GM—W. S. Thomson..Madisonville, Ky.
GS—W. S. Thomson, " "
PA—W. S. Thomson, " "
EM—N. E. Stone, " "
S of H—Mules, track gauge 40 in.
S of M—6 Comp. air machines.
PP—1 Boiler total 150 H. P.; 1 air comp.
EMP—62.
Sales Agent, E. P. Ware, Trenton, Ky.

KINGTON COAL CO.
Nos. 1 and 2 Mines; Slopes.
PO—Morton's Gap, Ky.—SP—Morton, Ky—CTY—Hopkins; RR—L. & N.
GM—W. W. Kington..Morton's Gap, Ky.
PA—O. J. Oates, " "
MS—Chas. Wilson, " "
SM—O. J. Oates, " "
EM—Earl Stone .... Madisonville, Ky.
S of H—Mules and motors.
S of M—Comp. air mach.
PP—3 boilers, total, 450 H. P., gen. unit 250 volts D. C.
EMP—300.

LAM COAL CO.
Lam Mine; Drift; West Kentucky Seam.
PO—Bevier, Ky.; SP—Same; CTY—Muhlenberg. RR—L. & N.
GM—H. Sumner.....Bevier, Ky.
PA—H Sumner, " "
EM—H. Sumner, " "
MS—Jesse Arnold, " "
SM—F. L. Lewis, " "
EE—G. Summers, " "
S of H—Rope and elec. loco.
S of M—2 Elec. breast machines.
PP—1 gen. unit, 250 volts D. C., 3 boilers, 360 H. P.
EMP—200.

LAM-WOODBURN COAL CO.
Morgan Mine.
PO—Mercer, Ky.; CTY—Muhlenberg.
No report.

LAMB COAL COMPANY.
Lamb Mine, Slope; No. 11 Seam; 4 ft. 4 in. to 6½ ft. thick.
PO—Providence, Ky.; SP—Same; CTY—Webster; RR—Lou. & Nash., Ill. Cent.
PR—J. Wesley Lamb.....Marion, Ky.
GM—Jas. W. Lamb....Providence, Ky.
PA—Jas. W. Lamb, " "
MS—Jas. W. Lamb, " "
S of H—Mules & Rope; track gauge 42 in.
S of M—2 Comp. air machines.
PP—2 Chandler & Taylor Return tubular boilers, 1 comp., 1 pump.
EMP—20 Last fiscal year output 8,230 tons. Sales Agent, Jas. W. Lamb, Providence, Ky.

LEE COAL CO., (THE)
Lee No. 1 Drift No. 2 Cannel Coal, 38 to 49 in. thick.
PO—Clearfield, Ky., SP—Redwine, Ky., CTY—Rowan; RR—Morehead and North Fork.
PR—A. W. Lee.....Clearfield, Pa.
TR—John W. Wrigley, " "
GM—Guy Snyder.....Clearfield, Ky.
GS—Guy Snyder, " "
PA—Guy Snyder, " "
EM—H. S. Adkins.....Wrigley, Ky.
MS—Harlen Conley.....Loveland, Ky.
SCO—Clearfield Supply Co., Buyer, H. M. Turner, Clearfield, "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—50. Last fiscal year output 8,715.79 tons.

LEEPER COAL COMPANY.
Slope; No. 9 Seam; 4 ft. 8 in. to 5 ft. thick.
PO—Providence, Ky.; SP—Same; CTY—Webster. RR—Ill. Central.
PR—T. J. Montgomery..Providence, Ky.
GM—T. J. Montgomery, " "
PA—T. J. Montgomery, " "
TR—J. E. Leeper, " "
MS—Bob Wanless, " "
EM—Thos. O. Long, " "
S of H—Mules.
S of M—Hand.
PP—1 Water tube boiler, Chandler & Taylor total 80 H. P.; 1 pump.
EMP—30. Last fiscal year output 31,755 tons. Sales agent, Southern Coal Co., Memphis, Tenn.

LICK BRANCH COAL CO.
Lick Branch and Kayu Mines, Drift; Harlan Seam, 40 to 54 in. thick.
PO—Coxton, Ky; SP—Same; CTY—Harlan; RR—L. & N., W. & B. M. Branch.
PR—J. W. Williams.....Coxton, Ky.
TR—Dover Williams, " "
EM—Pail Francis, " "
EE—Jack Mullins, " "
S of H—4 Elec. loco.; track gauge 42 in.
S of M—8 Elec. mach.
PP—Power purchased.
EMP—175. Output 84,976 tons.

LOG MOUNTAIN COAL CO.
General Office, Harrison, Ky.
PR—S. G. Seligmont....Tamaqua, Pa.
TR—Rucherfoard Fleet, Richmond, Va.
GM—James Tinley.....Harrison, Ky.
GS—G. D. Tinley , " "
PA—E. J. Sewell, " "
SCO—Addr.ss the Company. " "
EM—Culton & Bailey....Pineville, Ky.

No. 1 Mine; Drift; Mason Seam, 48 to 54 in. thick.
PO—Davisburg, Ky.; SP—Cairnes, Ky.; CTY—Bell; RR—L. & N.
MS—G. D. Tinley.....Harrison, Ky.
S of H—1 Elec. loco.; track gauge, 44 in.
S of M—3 Elec. mach.
PP—1 Return tubular boiler, 225 H. P., 2 gen. units, 225 volts D. C., 1 pump.
EMP—125. Last fiscal year output, 75,890 tons.

No. 52 Mine; Drift; Popular Lick Seam, 40 to 48 in. thick.
PO—Harrison, Ky.; SP—Same; CTY—Bell; RR—L. & N.
S of H—2 Elec. loco. and mules.
S of M—Hand.
PP—2 Return tubular boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—121. Last fiscal year output, 72,100 tons.

Nos. 53 and 54 Mines; Drift; Poplar Lick Seam, 40 to 48 in. thick.
PO—Davisburg, Ky.; SP—Same; CTY—Bell; RR—L. & N.
NOTE—Temporary closed.

LOONY CREEK COAL CO.
PO—Benham, Ky.; SP—Clutts, Ky.; CTY—Harlan; RR—L. & N.
PR—H. G. Lusk, . .Barbourville, Ky.
VPR—Robert W. Cole, Benham, Ky.
GM—Perry V. Cole, " "
PA—Chas. D. Cole, " "
MS—Perry V. Cole, " "
EE—T. K. Johnstone, " "
SM—Chas. D. Cole " "
S of H—Mules.
S of M—Goodman shortwall elec. machine.
PP—Westinghouse-Harrisburg gen. unit 250 volts D.C., 100 K.W.
EMP—50.

LOUISA COAL COMPANY.
See Eastern Kentucky Coal Co.

LOW ASH COAL CO.
Out of business.

LOW ASH MINING CO.
Shaft Mine; Barner Seam, 39 to 44 in.
PO—Middlesboro, Ky.; SP—Excelsior, Ky.; CTY—Bell; RR—L. & N.
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PR—E. P. Nicholson, Middlesboro, Ky.
GM—F. D. Hart, Jr., " "
EE—F. D. Hart, Jr., " "
GS—J. D. Simpson, " "
PA—Thos. Yarber, " "
EM—J. C. Richardson, " "
MM—Jim Brimm,
S of H—Mules.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., power purchased.
New mine.

LOWER HIGNITE COAL CO.
PO—Middesboro, Ky.; SP— Martea, Ky.; CTY—Bell; RR—L. & N.
PR—A. H. Rennebaum..Middlesboro, Ky.
VP—C. H. Ralston and W. E. Gum.
Successors to Sagamore Coal Co.

LUKE-DRUMMOND COAL CO.
Sold to Crystal Coal Co.

McHENRY COAL CO.
General Office, Central City, Ky.
PR—T. C. Du Pont....Wilmington, Del.
TR—L. L. Dunham, New York City, N.Y.
VP—S. J. Gish.....Central City, Ky.
GM—S. J. Gish, " "
EM—B. E. Hess, " "
Sales Agent, J. H. Small, Central City, Ky.
Render Mine; Slope; No. 9 Seam; 54 to 60 in. thick.
PO—McHenry, Ky.; SP—Same; CTY—Ohio; RR—Ill. Cent.
MS—L. L. Stewart.....McHenry, Ky.
SM—L. L. Stewart, " "
S of H—1 Elec. loco.; track gauge, 42 in.
S of M—7 Elec. mach.
PP—3 Return tubular boilers, total 400 H. P., 1 gen. units, 250 volts D. C., 1 pump.
EMP—135. Last fiscal year output 71,631 tons.

Echols Mine; Shaft; No. 9 Seam; 54 to 60 in. thick.
PO—Echols, Ky.; SP—Same; CTY—Ohio; RR—Ill. Cent.
MS—J. L. Jenkins.....Echols, Ky.
SM—A. T. Baker, " "
S of H—1 Elec. loco.; track gauge, 40 in.
S of M—4 Elec. mach. and hand.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—138. Last fiscal year output 65,62 tons.

McNEILL BROS.
Jewell Mine.
PO—Pittsburgh, Ky.; CTY—Laurel.
No report.

MAGNET COAL CO.
Drift Mines; Dean Seam, 5 ft. 2 in. thick.
PO—Four Mile, Ky. SP—Hosman, Ky. CTY—Bell; RR—L. & N.
PR—J. C. Hoskins.....Four Mile, Ky.
GM—J. C. Hoskins, " "
MS—J. C. Hoskins, " "
TR—John Morgan, " "
PA—L. Quinn, " "
MM—J. D. Orr, " "
EE—John Hoskins, " "
EM—Cultom & Bailey....Pineville, Ky.
SCO—Magnet Commissary Store, Buyer L. Quinn.
S of H—4 Elec. loco.; track gauge 40 in.
S of M—4 Elec. mach.
PP—1 water tube boiler, 150 H. P., 1 gen. unit, 150 volts D. C.
EMP—105. Last fiscal year output 75,000 tons.
Sales Agency, Bewley Darst Coal Co., Knoxville, Tenn.

MAHAN JELLICO COAL CO.
Drift Mine, Jellico Seam, 34 to 48 in. thick.
PO—Packard, Ky.; SP—Same (Prepay); CTY—Whitley; RR—L. & N., Pine Mtn. Branch.
PR—T. B. Mahan, Williamsburg, Ky.
GM—T. B. Mahan, " "
GS—Dave Martin. .....Packard, Ky.
PA—U. S. Siler, " "
MM—J. M. Hill, " "
EE—J. M. Hill, " "
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—1 Elec., 28 comp. air mach.
PP—4 Return tubular boilers, gen. unit 250 volts D. C., 2 compressors.
EMP—240. Last fiscal year output 131,056.80 tons.

MAIN JELLICO MOUNTAIN COAL CO.
Kensee Mines, Drift, Jellico Seam.
PO—Kensee, Ky.; SP—Jellico; CTY—Whitley; RR—L. & N.
GM—J. H. Barker.....Kensee, Ky.
PA—J. H. Barker, " "
MS—John Rudolph, " "
EM—D. C. Barker.....Jellico, Tenn.
S of H—Mules.
S of M—Hand.
PP—Boiler, 25 H. P.
EMP—100.

MAJESTIC COLLIERIES CO.
Majestic Mine, Drift, Warfield, Alma and Glen Alum Seams, 4½ to 9 ft. thick.
PO—Majestic, Ky., SP—Cedar, W. Va., CTY—Pike. RR—N. & W., Poplar Creek Branch.
PR—W. A. Phillips....Mt Carmel, Pa.
TR—Geo. C. Graeber....Shamokin, Pa.
GM—H. G. Van Hoose....Majestic, Ky.
PA—T. R. Joseph, " "
MS—O. A. Jacoby, " "
MM—L. G. Seale, " "
EE—L. G. Seale, " "
EM—Meem & Haskins..Bluefield, W.Va.
SM—W. T. Wingfield....Majestic, Ky.
S of H—Mules, 5 elec. and 1 steam loco.; track gauge 56 in.
S of M—Elec. machines.
PP—2 Water tube and 2 return tubular boilers, total 600 H. P., 2 gen. units 2200 volts A. C.
EMP—250. Last fiscal year output 155,000 tons. Sales Agency, Castner, Curran & Bullitt, Phila., Pa.

MAMMOTH BLUE GEM COAL CO.
Succeeded by Kentucky-Tennessee Coal Co.

MARROWBONE COKE CO.
Marrowbone Nos. 1 and 2 Mines; Drifts; Lower and Upper Elkhorn Seam, 42 to 48 in. thick.
PO—Lookout, Ky., SP—Rockhouse, Ky., CTY—Pike. RR—C. & O., Marrowbone and Big Sandy Div.
PR—J. W. Abraham....Uniontown, Pa.
TR—J. W. Abraham, " "
GM—J. J. Christie.....Lookout, Ky.
GS—J. J. Christie, " "
PA—J. J. Christie, " "
EM—Edward Holly.....Pikeville, Ky.
SCO—Rockhouse Supply Co., Buyer, J. J. Christie, Lookout, Ky.
S of H—Mules and 1 elec. loco.; track gauge 44 in.
S of M—Hand, and 2 elec. machines.
PP—2 Brownell return tubular boilers, total 300 H. P., gen. units, 250 volts D. C.
EMP—75.
32 Bee Hive coke ovens. Last fiscal year output 50,000 tons. Sales Agency, Eaton, Rhodes & Co., Cincinnati, O.

MARTIN & POLLOCK COAL CO.
Martin Mine, Drift; "No. 9" Seam, 4½ ft. thick.
PO—Cromwell Ky.; CTY—Ohio; RR—Green River.
PR—A. R. Pollock.....Island, Ky.
TR—H. R. Martin.....Cromwell, Ky.
S of H—Mules; track gauge 36 in.
S of M—Hand.

MARY LUCK COAL CO.
See Big Sandy Cons. Fuel Co.

MATTHEWS JELLICO COAL CO.
Out of business.

MERCER COAL CO.
Doey Mine.
PO—Mercer, Ky.; CTY—Muhlenberg.
No report.

MIDDLE CREEK COAL CO., (THE)
Middle Creek Mine, Drift, No. 1 Seam, 3 to 5 ft. thick.
PO—Prestonburg, Ky., SP—Same, CTY—Floyd; RR—Big Sandy Div. C. & O.
PR—Hiram Harris....Prestonburg, Ky.
TR—Geo. B. Archer, " "
GM—Walter S. Wells, " "
MS—J. L. Wortman, " "
PA—J. Lee Salmons, " "
EE—H. L. Wells, .. Prestonburg, Ky.
EM—Ed. Hailey.....Pikeville, Ky.
SCO—B. M. Spurlock..Middle Creek, Ky.
S of H—Mules and 1 elec. loco., track gauge 42 in.
S of M—8 Elec. machines.
PP—1 Union Iron Works water tube boiler, 150 H. P., 1 gen. unit 250 volts D. C.
EMP—100. Last fiscal year output 60,000 tons. Sales Agent, David Halley Ironton, Ohio.

MINERAL FUEL CO.
Now Elkhorn Mining Corp.

MONARCH COAL & COKE CO.
Monarch Mine; Drift; Lower Hignite Seam, 47 to 55 in. thick.
PO—Middlesboro, Ky., SP—Wilmont, Ky., CTY—Bell. RR—L. & N. and Sou., Stony Fork Branch.
PR—Daniel Cooper Swab, Hartranft,Tenn
TR—M. S. Hollingsworth, Middlesboro, Ky.
GM—Wm. Costello, " "
PA—Wm. Costello, " "
GS—J. L. Drake, " "
EM—J. C. Richardson, " "
EE—Walker Jackson, " "
SM—J. H. Brown.....Shamrock, Ky.
S of H—Mules, and 2 elec. loco., track gauge 44 in.
S of M—2 Elec. short wall machines.
PP—1 Erie waer tube boiler, 100 H. P. and 3 pumps.
EMP—100 . Last fiscal year output 62,000 tons.
Sales Agency, Royal Consolidated Coal Co., Knoxville, Tenn.

MORGANFIELD COAL & MINING CO.
Morganfield Mine, Shaft, No. 11 Seam, 56 in. thick.
PO—Morganfield, Ky., SP—Same, CTY—Union. RR—I. C., Uniontown Br.
PR—W. H. Lloyd....Morganfield, Ky.
GM—W. H. Lloyd, " "
PA—W. H. Lloyd, " "
MS—Henry Lloyd, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—2 Return tubular boilers, total 160 H. P., 2 pump.
EMP—407. Last fiscal year output 10,377 tons.
Sales Agent, W. H. Lloyd.

MOSS COAL COMPANY, THE
Barner Mine; Shaft; Barner Seam, 36 to 40 in. thick.
PO—Meldrum, Ky.; SP—Same; CTY—Bell. RR—L. & N.
PR—Ray Moss.....Middlesboro, Ky.
GM—Ray Moss, " "
TR—J. G. Moss.....Hartranft, Tenn.
MS—H. H. Duncan, .. Meldrum, Ky.
CE—C. R. Conner..Huntington, W. Va.
EM—C. P Davidson..Middlesboro, Ky.
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—1 W. W. water tube boiler and 1 pump.
Last fiscal year output 40,000 tons.

MOSS & SONS COAL CO.
Wilhoit Mine, Drift; "Harlan" Seam, 40 to 48 in. thick.
PO—Wilhoit, Ky. SP—Jaydee, Ky. CTY—Harlan. RR—L. & N., W.& B.B.
PR—W. H. Moss, ... Pineville, Ky.
TR—M. J. Moss, " "
GM—R. B. Moss, " "
EM—Caneton & Bailey, " "
PA—J. S. Stoakes.....Wilhoit, Ky.
MS—I. W. King, " "
EE—John Watkins, " "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—4 Elec. mach.
PP—1 Walsh & Weidner return tubular boiler total 250 H. P., 250 volts, D. C.; 1 pump.
EMP—40. Last fiscal year output 35,000 tons.

MOUNTAIN LAKE COAL COMPANY.
Mountain Lake Mine, Drift, Turner Seam, 4 to 5 ft. thick.
PO—Middlesboro, Ky.; SP—Same; CTY—Bell; RR—L. & N. and So.
PR—J. S. Victor.....Middleboro, Ky.
TR—F. W. Victor, " "
GS—W. S. Williams, " "
SM—J. S. Victor, " "
S of H—Mules and Incline; track gauge 44 in.
S of M—Hand.
Last fiscal year output 24,800 tons.

MUHLENBERG COAL CO.
See Caldwell Coal Co.

NEBO COAL COMPANY.
Nebo No. 1 Mine, Slope; No. 14 Seam; 5 ft. 9 in. to 7 ft. thick.
PO—Nebo, Ky.; SP—Same; CTY—Hopkins. RR—L. &N.
PR—M. S. Barker.....Louisville, Ky.
TR—B. Strauss, " "
GS—Jno. B. Robinson.....Nebo, Ky.
PA—Jno. B. Robinson, " "
EM—Jno. B. Robinson, " "
MS—Chas. P. Wallace, " "
MM—W. A. Bates, " "
EE—W. A. Bates, " "
SM—C. O. Wilkie, " "
S of H—Mules and 2 elec. loco.; track gauge 42 in.
S of M—Six elec. mach.
PP—2 Return tubular boilers total 300 H. P., 1 gen. unit, 250 volts, D. C.; 1 pump.
EMP—150. Output 10,000 tons per month.

NELSON CREEK COAL CO.
Nelson Mine, Shaft; No. 9 Seam, 5 ft. thick.
PO—Nelson, Ky., SP—Same, CTY—Muhlenberg. RR—I. C. R. R.
PR—R. S. Lytle.....Danville, Ky.
GM—J. W. Bastin.....Nelson, Ky.
GS—J. W. Bastin, " "
PA—J W. Bastin, " "
EM—Chas. Lunsford.....Nelson, Ky.
MS—Chas. Lunsford " "
MM—W. F. Wallace, " "
SM—D. L. Young. " "
S of H—Mules; track gauge 36 in.
S of M—30 Comp. air mach.
PP—3 boilers, total 450 H. P., 1 air comp. and 1 pump.
EMP—200. Last fiscal year output 100,000 tons. Sales Agency, Southern Coal Co., Memphis, Tenn.

NEW BELL JELLICO COAL CO.
Nos. 1, 2 and 3 Mines, Drifts, Dean Seam. 6 to 10 ft. thick.
PO—Bell Jellico, Ky., SP—Four Mile, Ky., (coming in) and Blowers, Ky., (going out) CTY—Bell. RR—L. & N., Pine Mountain Br.
PR—T. D. Cassidy.....Lexington, Ky.
TR—T. J. Cassidy, " "
GM—W. McC. Johnston, Bell Jellico, Ky.
PA—W. H. Collier, " "
EM—W. B. Johnston, " "
MM—W. B. Johnston, " "
EE—W. B. Johnston, " "
SCO—New Bell Jellico Coal Co. Store. Buyer W.H. Collier, Bell Jellico, Ky
S of H—Mules; track gauge 38 in.
S of M—15 comp. air machines.
PP—2 return tubular boilers, total 300 H. P., 1 air comp. and 3 pumps.
EMP—200. Last fiscal year output 125,000 tons. Sales Agency, Cassidy Coal Co., Lexington, Ky.

NEW HUGHES JELLICO COAL CO.
Drift; Jellico Seam.
PO—Elys, Ky.; SP—Same; CTY— Knox RR—L. & N.
GM—R. N. Carnett.....Elys, Ky.
PA—R. N. Carnett, " "
MS—R. N. Carnett, " "
EM—L. C. Carns, " "
SM—A. M. Decker, " "
S of H—Elec. loco. and mules.
S of M—Elec.
PP—Boilers 250 H. P., gen. upit 250 volts D. C.
EMP—125.

NEW LAUREL COAL CO.
New Laurel Mine; Slope.
PO—Pittsburg, Ky.; SP—Same; CTY—Laurel.
No report.

NEW SEBREE COAL MINING CO.
PO—Sebree, Ky.
Successors to Sebree Mining & Fuel Co.

NEW STRAIGHT CREEK COAL CO.
Out of business.

NICHOLSON MINING & MFG. CO.
"Hot Stuff" Mine, Shaft, No. 9 Seam, 4 ft. 4 in. to 4 ft. 6 in. thick.
PO—Henderson, Ky., SP—Same, CTY—Henderson; RR—L. & N. and I. C.
PR—J L. Nicholson....Henderson, Ky.
TR—Fred Nicholson, " "
PA—Fred Nicholson, " "
GM—J. L. Nicholson, " "
GS—John Maple, " "
EM—John Maple, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 350 H. P.
EMP—30. Last fiscal year output 25,000 tons. Sales Mgr., Leslie Nicholson.

NORTH EAST COAL CO.
General Office, Philadelphia, Pa.
PR—A.D.W.Smith, Philadelphia, Pa.
TR—A. D. W. Smith, " "
GM—H. La Viers.....Paintsville, Ky.
PA—R. C. Thomas, " "
MM—H. F. Pfening, Jr., " "
EE—H. J. Wheeler, " "
SCO—Thealka Store, Buyer, W. R. Davis, Thealka, Ky.
Sales Agency, Middle West Coal Co., Cincinnati, O.

No. 1 Mine; Drift; No. 1 Seam, 42 in. thick.
PO—Thealka, Ky.; SP—Same; CTY—Johnson; RR—C. & O., Big Sandy Div.
MS—H. Pfening, Sr.,...Paintsville, Ky.
S of H—2 Elec. loco.; track gauge 42 in.
S of M—10 Elec. mach.
PP—2 Return tubular boilers, total 300 H.P., 1 gen. unit 250 volts, D.C., 4 pumps.
EMP—130. Last fiscal year output 110,576 tons.

No. 2 Mine; Drift; No. 1 Seam, 42 in. thick.
PO—Thealka, Ky.; SP—Same; CTY—Johnson; RR—C. & O., Big Sandy Div.
MS—John Childress.....Thealka, Ky.
S of H—2 Elec. loco.; track gauge 42 in.
S of M—7 Elec. mach.
PP—2 Return tubular boilers total 250 H. P., 1 gen. unit 250 volts A. C. 3 pumps.
EMP—75. Last fiscal year output 65,-800 tons.

No. 3 Mine; Drift; No. 1 Seam, 40 in. thick.
PO—Thealka, Ky.; SP—Same; CTY—Johnson; RR—C. & O., Big Sandy Div.
MS—T. J. Davis ..... Thealka, Ky.
SM—W. J. Davis, " "
S of H—2 Elec. loco.; track gauge 42 in.
S of M—7 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 3 pumps.
EMP—106. Last fiscal year output 73,494 tons.

Continued on Next Page.

NORTH EAST COAL CO.—Cont.
No. 7 Mine; Drift; No. 1 Seam, 40 in. thick.
PO—Auxier, Ky.; SP—Same; CTY—Floyd; RR—C. & O., Big Sandy Div.
MS—J. W. Adkins.....Auxier, Ky.
SM—W. H. Powers, " "
S of H—4 Elec. loco.; track gauge 42 in.
S of M—14 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 1 gen. unit 250 volts D. C., 4 pumps.
EMP—160. Last fiscal year output 122,366 tons.

NORTH FORK CANNEL COAL COMPANY.
Mine No. 1, Slope, Kentucky No. 2 Seam; 32 in. to 48 in. thick.
PO—Loveland, Ky. SP—Redwine, Ky. CTY—Morgan; RR—M. & N. F. Ry.
PR—A. H. McClure....Frankfort, Ky.
TR—S. W. Stout....Parkersburg, W.Va.
GM—H. M. Collins, .. Loveland, Ky.
MS—H. M. Collins, " "
PA—H. M. Collins, " "
EM—H. S. Adkins, " "
S of H—Mules; track gauge 42 in.
Sales agent, A. H. McClure, Frankfort, Ky.

NORTH FORK COAL CO.
Nos. 1 and 2 Mines; Drift, No. 4 Seam, 38 to 44 in. thick.
PO—Lennut, Ky.; SP—Same; CTY—Perry; RR—L. & E., Extension.
PR—C. G. Bowman ....Lennut, Ky.
TR—C. G. Bowman, " "
GM—K. E. Watts, " "
GS—K. E. Watts, " "
PA—K. E. Watts, " "
CE—S. M. Boggs, " "
MM—R. B. Gamble, " "
SCO—Address the Company.
S of H—Mules.
S of M—10 Comp. Air Mach.
PP—2 Compressors, 2 pumps.
EMP—100. Last fiscal year output, 25,000 tons.
Sales Agency, Cassidy Coal Co., Lexington, Ky., and Castner, Curran & Bullitt, Cincinnati, O.

NORTH JELLICO COAL CO., (THE)
General Office, Louisville, Ky.
PR—W. S. Speed.....Louisville, Ky.
VP—F. M. Sackett, " "
TR—C. D. Major, " "
GM—C. S. Nield.....Wilton, Ky.
PA—L. R. Reams, " "
EE—H. C. Craft, " "
Sales Agent, B. F. Reed, Louisville, Ky.

Wilton and Olive Hill Mines, Drifts, Jellico Seam, 42 to 48 in. thick.
PO—Wilton, Ky. SP—Woodbine, Ky., CTY—Knox; RR—L. & N., Wilton Branch.
MS—A. Frost.....Wilton, Ky.
S of H—11 Elec. loco.; track gauge 36 in.
S of M—21 Elec. mach.
PP—5 Babcock & Wilcox water tube boilers, toal 850 H. P., 3 gen. units, 2300 volts A. C., 3-phase 60 cycle, and 250 volts D. C., 2 pumps.
EMP—550. Last fiscal year output 314,281 tons.
Note—Bertha Mine worked out. Output for last year 78,034 tons.

NORTON COAL MINING CO.
PR—Sterling S. Lanier, Birmingham, Ala.
TR—Sterling S. Lanier, Jr., " "
GM—Sterling S. Lanier, Jr. " "
GS—Henry C. Delaney, " "
PA—R. L. Schlotman, " "
EE—W. D. Morton, " "
EM—Geo. Wales.....Central City, Ky.
SCO—Nortonville Merc. Co., Buyer, J. B. Harrison, Nortonville, Ky.
Sales Agency, Monro, Warrior, C. & C. Co., Birmingham, Ala.

No. 1 Mine, Shaft, Nos. 9, 11 and 12 Seams, 4 ft. 10 in. to 6 ft. 3 in. thick.
PO—Nortonville, Ky., SP—Same, CTY—Hopkins. RR—I. C. & L. & N.
S of H—Mules and 3 Elec. loco.; track gauge 36 in.
S of M—13 Elec. mach.
PP—4 Return tubular boilers, total 500 H. P., 2 gen. units 250 volts D. C., 3 pumps.
EMP—300. Last fiscal year output 220,467 tons.

No. 2 Mine, Slope, No. 11 Seam, 6 to 7 ft. thick.
PO—Nortonville, Ky., SP—Same, CTY—Hopkins; RR—L. & N.
S of H—Mules; track gauge 42 in.
S of M—3 Elec. mach.
PP—1-100 H. P. boiler, 1 pump. Power furnished from No. 1 Mine.
EMP—30.
Note—Did not operate last year.

OHIO VALLEY COAL & MINING CO.
DeKoven Mine, Slope, No. 9 Seam, 4 ft. 8 in. thick.
Have washery but do not operate same.
PO—DeKoven, Ky. SP—Same. CTY—Union. RR—I. C., Evansville Div.
PR—W. K. Field, .. Pittsburgh, Pa.
GM—G. W. Schleuderberg, " "
PA—F. E. Now, " "
GS—A. A. Galloway.....De Koven, Ky.
MS—J. T. McCauley, " "
MM—F. C. Bacttege, " "
EE—Lowen McGary, " "
SCO—Union Supply Co., J. T. McCauley, Mgr. " "
S of H—3 elec. loco. Track gauge 44½ in.
S of M—6 elec. mach. and 12 comp. air mach.
PP—6 return tubular boilers, total 900 H.P., 300 K.W., 500 volts D. C.
EMP—283. Coke ovens, 20 Bee Hive. Last fiscal year output 113,409 tons.

OLD DIAMOND COAL CO.
Succeeded by Bowyer & Poff.

O'NEILL COAL CO.
O'Neill Mine, Shaft, No. 9 Seam, 4 ft. 2 in. to 4½ ft. thick
PO—Island, Ky. SP—Same. CTY—McLean. RR—L. & N., O. & N. Branch.
PR—John O'Neill, ... Island, Ky.
TR—John Penrod, " "
GM—John O'Neill, " "
GS—John O'Neill, " "
PA—John Penrod, " "
EM—Rock Johnson.....Island, Ky.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—30. Last fiscal year output 18,749 tons. Sales Manager, John O'Neill.

OVERSTREET, W. E.
PO—Owensboro, Ky; CTY—Daviess.
No report.

OWENSBORO FUEL CO.
PO—Owensboro, Ky. No report.

PANAMA COAL CO.
Panama Mine, Shaft, No. 9 Western Kentucky Seam, 58 in. thick.
PO—Robards, Ky. SP—Same. CTY—Henderson. RR—L. & N.
PR—O. W. Rash, ... Robards, Ky.
TR—M. V. Denton, " "
GM—M. V. Denton, " "
GS—M. V. Denton, " "
PA—M. V. Denton, " "
MS—Joe McIntire, " "
CE—C. W. McElroy, Morganfield, " "
EM—C. W. McElroy, " "
MM—H. Cross, ... Robards, " "
EE—H. Cross, " "
SCO—Cottingham Bros. " "
Buyer, C. E. Cottingham, " "
S of H—Mules and 1 elec. loco. Track gauge 42 inches
S of M—5 Elec. mach.
PP—3 boilers, total 450 H.P., 250 volts D.C., 1 pump.
EMP—70. Last fiscal year output 31,877 tons. Sales Agent, M. V. Denton, Robards, Ky.

PEARL, J. N., CO.
PO—East Bernstadt, Ky. SP—Same. CTY—Laurel. No report.

PEERLESS COAL CO., (THE)
Peerless Mine, Drift, Jellico Seam, 36 to 48 in. thick.
PO—Wofford, Ky. SP—Same. CTY—Whitley. RR—L. & N.
PR—Dr. D. O. Foley, Jellico, Tenn.
TR—T. F. McConnell, Wofford, Ky.
GM—H. E. Bullock, .. Hazard, "
GS—John Surgener, .. Wofford, "
MS—John Surgener, " "
EM—Harry Taylor, Williamsburg, "
EE—T. C. Farmer, ... Wofford, "
SM—T. F. McConnell, " "
S of H—Gravity and 2 elec. locos. Track gauge 42 in.
S of M—3 elec. mach.
PP—1 pump, one boiler, 125 H. P.
EMP—90. Last fiscal year output 15,000 tons.

PEOPLES MINING CO.
Shaft Mine; No. 9 Seam, 48 to 54 in. thick.
PO—Henderson, Ky. SP—Same. CTY—Henderson. RR—I. C., L. & N.
PR—S. L. Marshall.....Henderson, Ky.
TR—W. T. Lambert, " "
GM—Ben W. Floyd, " "
PA—Ben. W. Floyd, " "
MS—Ben. W. Floyd, " "
EM—T. E. Davis, " "
S of H—Mules.
S of M—Hand.
PP—Boiler, 80 H. P., and 2 pumps.
EMP—60.

PERKINS COAL CO.
Cooke Mine; Drift; Jellico Seam, 30 to 48 in. thick.
PO—Jellico, Tenn.; SP—Myrll, Ky.; CTY—Whitley; RR—L. & N.
PR—B. C. Parker....Barboursville, Ky.
TR—C. Perkins.....Williamsburg, Ky.
GM—C. Perkins, " "
PA—C. Perkins, " "
MS—I. B. Pfoff.....Jellico, Tenn.
SCO—Address the Company, " "
S of H—Mules.
S of M—Hand.
Successors to the Cooke-Jellico Coal Co.

PERRY COUNTY BLOCK COAL CO.
PO—Viper, Ky.; CTY—Perry.
PR—R. F. Peters.....Viper, Ky.
TR—R. F. Peters, " "
Secy—W. E. Price, " "

PETERS & SOULEYRET.
Out of business.

PETERSBURG COAL MINING CO.
Drift Mine; No. 6 Seam, 56 to 60 in. thick.
PO—Mannington, Ky.; SP—Same; CTY—Christian; RR—L. & N., Henderson Br.
PR—W. A. Lam.....Mannington, Ky.
GM—W. A. Lam, " "
PA—W. A. Lam, " "
CE—W. A. Lam, " "
MS—W. A. Lam, " "
SM—W. A. Lam, " "
TR—J. A. Lam, " "
EM—W. J. Franklin , " "
MM—E. Aldridge, " "
S of H—Mules; track gauge, 42 in.
S of M—Hand.
PP—1 Return tubular boiler, 150 H. P., 1 pump.
Last fiscal year output, 45,000 tons.

PHILLIPS, T. J. COAL CO.
PO—Richardson, Ky.; CTY—Lawrence.
No report.

PIONEER COAL CO.
General Office, Louisville, Ky.
Pioneer Mine, Slope, Straight Creek Seam, 38 to 52 inches thick.
PO—Kettle Island, Ky. SP—Same. CTY—Bell. RR—L. & N.
PR—F. M. Sackett, .. Louisville, Ky.
TR—C. D. Major, " "
GM—C. S. Nield, Kettle Island, "
ASST GM—Grant Mason, " "
PA—Grant Mason, " "
SM—T. B. Hail, " "
MM—G. Craft, " "
EE—Wm. Brock, " "
S of H—3 elec. loco. Track gauge 43 in.
S of M—7 elec. machines.
PP—2 Babcock-Wilcox water tube boilers, total 225 H.P', 2 gen. units 250 volts D.C., 2 pumps.
EMP—300. Last fiscal year output 200,000 tons. Sales Agent, B. F. Reed, Louisville, Ky.

PITTSBURGH COAL CO.
General Office, ... Baskett, Ky.
PR—Alexander Blair, Henderson, "
GM—Alexander Blair, " "
GS—Alexander Blair, Jr., Baskett, "
PA—Alexander Blair, Jr., " "
SCO—Pittsburgh Coal Co. Store, Buyer, G. O. M. Connolly, Baskett, Ky.

Baskett Mine, Shaft, No. 9 Seam, 4 ft. thick.
PO—Baskett, Ky. SP—Same. CTY—Henderson. RR—L. H. & St. L.
S of H—Mules. Track gauge 36 in.
S of M—8 comp. air machines.
PP—2 Walton return tubular boilers, total 250 H. P., 1 air comp. and 1 pump.
EMP—125. Last fiscal year output 80,000 tons.

Spottsville Mine, Shaft, No. 9 Seam, 4 ft. thick.
PO—Spottsville, Ky. SP—Same. CTY—Henderson. RR—L. H. & St. L. Green River.
SM—Annie Stewart, .. Spottsville, Ky.
S of H—1 elec. loco. Track gauge 36 in.
S of M—4 elec. machines.
PP—3 Atlas water tube boilers, total 450 H.P., 1 gen. unit, 250 volts D.C., 3 pumps.
EMP—70.

PLEASANT VIEW JELLICO COAL CO.
Craley Mine, Drift, Jellico Seam, 34 to 42 in. thick.
PO—Pleasant View, Ky. SP—Same. CTY—Whitley. RR—L. & N., Main Line.
PR—L. Stowe, .. Pleasant View, Ky.
TR—L. Stowe, " "
PA—L. Stowe. " "
GS—Frank Carter, Pleasant View, Ky.
S of H—Mules. Track gauge 36 in.
S of M—Hand.

POND CREEK COAL CO.
Pond Creek Mines Nos. 1, 2, 3, 5, 6, 7 and 8, Drifts, Freeburn Seam, 4 to 6 ft. thick.
PO—Stone, Ky. SP—Same. CTY—Pike. RR—W. & P. C. Ry. of N. & W.
PR—T. B. Davis, ...New York City.
TR—F.W. Batchelder, Boston, Mass.
PA—W. T. Smythe, Huntington, W. Va.
SCO—Pond Creek Stores Co., Stone, Ky.
S of H—37 elec. loco. Track gauge 44½ in.
S of M—39 elec. machines.
PP—4 B. & W. water tube boilers, total 1,200 H.P., 2 gen. units, 2,300 volts A.C., 3-phase 25-cycle, and 250 volts D.C. Sales agency, Island Creek Coal Sales Co., Cincinnati, Ohio.

POWER COAL CO.
General Office, Jellico, Tenn.
Power Mine; Drift; Dean Seam, 78 to 84 in. thick.
PO—Bradel, Ky.; SP—Bennettsville, Ky.; CTY—Knox; RR—L. & N.
PR—Frank S. Foster, ...Red Ash, Ky.
TR—Louis Francis, " "
GM—Louis Francis, " "
EM—Louis Francis, " "
PA—Geo. Davenport, " "
GS—Mack Brown, ...Bradel, Ky.
MS—Mack Brown, " "
S of H—Comp. air loco. and mules; track gauge 40 in.
S of M—2 Comp. air mach.
PP—1 Randall water tube boiler, 1 compressor.

PRESTONBURG COAL CO., INC.
General Office, ... Tazewell, Va.
Nos. 1 and 2, Drift, No. 1 Seam, 4 ft. 4 in. to 4 ft. 11 in. thick.
PO—Prestonburg, Ky. SP—Same. CTY—Floyd. RR—C. & O.
PR—J. S. Gillespie, .. Tazewell, Va.
TR—Barnes Gillespie, " "
GM—J. W. Alley, ..Prestonburg, Ky.
GS—J. W. Alley, Prestonbuurg Ky.
EE—C. W. Alley, " "
EM—Edward Holly.....Pikesville, "
SCO—Prestonburg Coal Co., Inc. Buyer, Z. S. Dickerson, Prestonburg, Ky.
S of H—1 elec. loco. Track gauge 48 in.
S of M—6 elec. chain machines.
PP—2 return tubular boilers, total 300 H.P., 1 gen. unit, 250 volts D.C. 1 pump.
EMP—55. No. 2 mine not in operation. Last fiscal year output 55,000 tons. Sales agents, Monarch Coal Co., Richmond, Indiana.

PRINCESS COAL CO.
Princess Mine, Drift, No. 7 Seam, 4 ft. thick.
PO—Princess, Ky. SP—Same. (Prepay) CTY—Boyd. RR—A. C. & I., and C. & O.
PR—C. V Bartels, ... Princess, Ky.
GM—C. V. Bartels, " "
PA—C. V. Bartels, " "
GS—J. C. Price, " "
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—30. Last fiscal year output 10,000 tons. Sales Agency, Kentucky Coal & Coke Co.

PROCTOR COAL CO.
Two mines in Kentucky, 1 mine in Tennessee.
Proctor Mines, Drift, Jellico Seam, 3½ ft. thick.
PO—Red Ash, Ky. SP—Jellico, Tenn. CTY—Campbell; RR—L. & N., Sou.
PR—Chas. Finley, .Williamsburg, Ky.
GM—Chas. Finley, " "
TR—F. W. Finley, " "
GS—Philip Francis, .. Jellico, Tenn.
PA—Philip Francis, " "
EE—Thos. Francis, " "
EM—Louis Francis, ... Red Ash, Ky.
SM—Geo. W. Davenport, " "
S of H—Mules. Track gauge 40 in.
S of M—2 elec. mach. and hand.
PP—2 Atlas water tube boilers, total 300 H. P., 2 gen. units, 1 2,300 volts A. C., 3 phase 60 cycles, 1,250 volts D. C., 3 pumps.
EMP—40. Last fiscal year output 31,425 tons.

PROVIDENCE MINING CO.
Mines Nos. 2 and 3, Shafts, "No. 9" Seam, 5 ft. thick.
PO—Providence, Ky. SP—Same. CTY—Webster. RR—L. & N., I. C.
PR—W. J. Nisbet, .. Providence, Ky.
GM—W. J. Nisbet, " "
PA—W. J. Nisbet , " "
TR—Percy D. Berry, " "
SM—D. S. Payne, " "
EM—A. L. Donan, " "
EE—Ernest Martin, " "
S of H—2 elec. locos. Track gauge 36 and 42 in.
S of M—Elec. mach.
PP—7 return tubular boilers, total 1,000 H. P., 3 gen. units, 250 volts D.C., 7 pumps.
EMP—250. Last fiscal year output 260,000 tons.

PUCKETTS CREEK COAL CO.
General Office, Middlesboro, Ky.
Drift Mine, Harlan Seam, 32 to 35 in. thick.
PO—Burchfield, Ky.; SP—Same; CTY—Bell; RR—W. & B.

Continued on Next Page.

PUCKETTS CREEK COAL CO.
PR—John Howard.....Middlesboro, Ky.
TR—John Howard, " "
GM—John Howard " "
GS—John Howard, " "
PA—C. J. Hill.....Burchfield, "
MS—W. T. Mullins " "
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—2 Elec. mach.
PP—1 Return tubular boiler, 150 H. P., gen. unit, 200 K. W., 250 volts D. C.
Sales Agent, John Howard, Middlesboro, Ky.
Successors to the Black Mountain Coal Co.

PURITY CANNEL COAL CO. (THE)
General Office, Prestonburg, Ky.
Purity Mine; Drift; Seam 52 in. thick.
PO—Prestonburg, Ky.; SP—Same; CTY—Floyd; RR—C. & O., Big Sandy Div.
PR—H. S. Ayers, ...Detroit, Mich.
TR—E. J. Halley.....Prestonburg, Ky.
PA—E. J. Halley, " "
GM—David Halley, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
Sales Agents, Ayers & Lang, Detroit, Mich.

RACCOON COAL CO.
Succeeded by Douglas Coal Mining Co.

RALSTON COAL CO.
PO—Ralston, Ky.; SP—Capitol, Ky.; CTY—Bell.

REINECKE COAL MINING CO. (THE)
Reinecke Mine, Shaft, No. 11 Seam, 6 ft. thick.
PO—Madisonville, Ky. SP—Same. CTY Hopkins. RR—L. & N.
PR—Caroline Penn.....Bellville, Ill.
TR—Mrs. Fred Reinecke, Madisonville, Ky.
GM—Richard Overall, " "
PA—Richard Overall, " "
GS—E. Braun, " "
EM—N. E. Stone, " "
S of H—3 15-ton elec. loco., track gauge 42 in.
S of M—13 elec. mach.
PP—8 Water tube boilers, total H. P. 1,100; 3 gen units, 550 volts D. C., 1 pump.
EMP—225. Last fiscal year output 202,000 tons.

REPUBLIC COAL CO.
Tasker Mine; Drift; Harlan Seam, 70 to 72 in. thick.
PO—Harlan, Ky.; SP—Tasker, Ky.; RR—L. & N.
PR—E. Guthrie, ...Harlan, Ky.
TR—E. O. Guthrie, " "
S of H—Mules and rope.
S of M—Elec. mach. and hand.
PP—Power purchased.
Sales Agent, Peyton Norvell.

REX COAL COMPANY.
Rex Red Ash Mine; Drift; Harlan Seam, 50 in. thick.
PO—Kitts, Ky. SP—Forester, Ky. CTY—Harlan; RR—L. & N., Wasiota & Black Mtn. Br.
PR—Thomas Bennett, .. Mullis, Ky.
TR—H. H. Bennett, ... Kitts, "
PA—H. H. Bennett, " "
SM—H. H. Bennett, " "
GM—C. V. Bennett, " "
MS—C. V. Bennett, " "
EM—Jos. McDonald, " "
S of H—Mules. Track gauge 42 in.
S of M—4 Comp. air mach.
PP—1 Return tubular boiler, 150 H. P. 1 engine and 2 pumps.
EMP—50. Last fiscal year output 15,249 tons. Sales Agent, Ky. Southern Coal Co., Louisville, Ky.

RIVER & RAIL COAL & COKE CO.
Shaft Mine; No. 11 Seam, 48 to 72 in. thick.
PO—Uniontown, Ky.; SP—Same; CTY—Union; RR—I. C.
PR—C. L. Deury... Morganfield, Ky.
TR—W. T. Deury, " "
GM—W. A. Scott, " "
GS—W. A. Scott, " "
PA—W. A. Scott, " "
MS—A. D. Reid, ... Uniontown, "
EM—C. W. McElroy, " "
SM—W. A. Scott. " "
MM—Chas. Marshall....Uniontown, Ky.
S of H—Mules. Track gauge 42 in.
S of M—13 Elec. mach.
PP—2 return tubular boilers, total 300 H. P., 1 generating unit, 250 volts, D. C., 2 pumps.
EMP—20. Last fiscal year output 20,000 tons.

ROCK ISLAND COAL CO.
Shaft Mine, No. 9 Seam, 54 in. thick.
PO—South Carrollton, Ky.; SP—Same; CTY—Muhlenberg; RR—L. & N.
PR—R. W. Browder, South Carrollton, Ky.
TR—M. A. Summers, " "
S of H—Mules.
S of M—Hand.
Idle for nearly a year. July 1st.

ROCKPORT COAL CO.
Crown Mine; Shaft; 54 to 62 in. thick.
PO—Rockport, Ky. SP—Same. CTY—Ohio. RR—I. C. R. R.
PR—H. L. Tucker, .. Rockport, Ky.
TR—P. O. McKinney, " "
GM—H. L. Tucker, " "
PA—H. L. Tucker.....Rockport, Ky.
MS—Bayliss Baker, " "
SM—R. M. Reid, " "
MM—C. E. Roark, " "
EE—C. E. Roark, " "
EM—Geo. Wales, .. Central City, Ky.
S of H—Mules and one 5-ton elec. loco. Track gauge 42 in.
S of M—9 elec. chain machines.
PP—2 Henry Vogt water tube boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 2 pumps.
EMP—150. Last fiscal year output 75,000 tons. Sales Agent, P. O. McKinney, Rockport, Ky.

ROSE CREEK COAL CO.
Shaft Mine, No. 9 Seam.
PO—Nebo, Ky. SP—Same. CTY—Hopkins. RR—L. & N.
GM—B. B. Rice, ... Nebo, Ky.
PA—B. B. Rice, "
SM—B. B. Rice, ... Nebo, Ky.
MS—Fred Dox, " "
S of H—3 elec. locos.
S of M—9 elec. mach.
PP—2 boilers, total 250 H. P., 1 gen. unit, 250 volts D. C.
EMP—150.

ROSS-PETREY COAL CO., INC.
Ross Petrey Mine; Drift, No. 4 Hazard Seam, 56 to 62 in. thick.
PO—Hazard, Ky.; SP—Same; CTY—Perry; RR—L. & E.
PR—L. E. Petrey, ...Hazard, Ky.
TR—S. D. Hughes, " "
GM—S. D. Hughes, " "
PA—S. D. Hughes, " "
GS—S. D. Hughes, " "
EM—H. S. Adkins, " "
S of H—Mules.
S of M—Hand.
EMP—50. Output 200 to 300 tons daily.

ROYAL COLLIERIES CO. THE
General Office, Toledo, O.
Kentucky Gem, Slope, "No. 1" Seam, 40 in. thick.
PO—Lower Greasy, Ky. SP—Offuth, Ky. CTY—Johnson. RR—C. & O., Big Sandy Branch.
PR—E. T. Jones, ... Jackson, O.
GM—E. W. Ervin.....Toledo, O.
TR—L. T. Jones, " "
PA—F. L. Long, ..Lower Greasy, Ky.
MS—F. L. Long, " "
SM—Geo. Meade, " "
MM—John Sparks, " "
EM—E. R. Kelly, ... Wellston, O.
S of H—1 Electric loco.
S of M—7 elec. machines.
PP—1 pump.
EMP—85. Last fiscal year output 55,385.65 tons. Sales Agent, E. W. Ervin, 1046 Ohio Bldg., Toledo, Ohio.

RUCKMAN COAL CO.
Highland Mine, Shaft, No. 9 Seam, 5 ft. 3 in. thick.
PO—Providence, Ky. SP—Same. CTY—Webster. RR—L. & N. I. C.
PR—D. J. Ruckman,. Providence, Ky.
GM—D. J. Ruckman, " "
PA—D. J. Ruckman, Providence, Ky.
TR—F. V. Ruckman, " "
GS—E. B. Robinson, " "
MS—W. D. Robinson, " "
CE—Thos. O. Long, " "
EM—Thos. O. Long, " "
MM—Thos. Blondon, " "
EE—Clarence Gray, " "
SCO—Ruckman Store Co., Buyer, J. B. Simpson.
S of H—Rope
S of M—Hand.
PP—2 boilers each 125 H. P.
EMP—70. Last fiscal year output 82,000 tons. Sales agent, E. M. Young, Providence, Ky.

RUDY, GEORGE H. & CO.
Overstreet and Rudy Mine, Shaft, No. 9 Seam, 4 ft. thick.
PO—Owensboro, Ky. RD 4. SP—Owensboro. CTY—Daviess. RR—L. & N., I. C. & St. L.
PR—G. H. Rudy, ... Owensboro, Ky.
TR—K. F. Rudy, " "
GM—G. H. Rudy, " "
PA—G. H. Rudy, " "
SM—G. H. Rudy, " "
S of H—Mules. Track gauge 35½ in.
S of M—Hand.
PP—1 pump.
EMP—20. Last fiscal year output 16,160 tons. Sales Mgr., G. H. Rudy.

RUDY, JOHN M.
Drift; Mine; Seam 54 in. thick.
PO—Owensboro, Ky. CTY—Daviess
PR—John M. Rudy, ... Owensboro, Ky.
GM—John M. Rudy, " "
PA—John M. Rudy, " "
MS—Henry Yeckering, " "
S of H—Mules.
S of M—Hand.
EMP—8 Last fiscal year output 6,552 tons.

RUSH BRANCH CANNEL COAL CO.
General Office, Mt. Sterling, Ky.
Mine Cannel Seam, 60 in. thick.
PO—Lenox, Ky.; SP—Redwine, Ky. CTY—Morgan; RR—Morehead and North Fork.
PR—John A. Judy, Mt. Sterling, Ky.
TR—R. H. Winn, " "

ST. BERNARD MINING CO.
General Office, ... Earlington, Ky.
PR—Geo. C. Atkinson, " "
Secy—Dan M. Evans, " "
VP & GM—Frank D. Rash, " "
GS—A. G. Spillman, " "
PA—W. E. Rash, " "
CHIEF EM—R. E. Wipfler, " "
MM—D. W. Umstead, " "
EE—N. W. Umstead, " "
SCO—St. Bernard Mng. Co. " "
Buyer, W. R. Coyle, " "
Sales agent, Dan M. Evans, " "

No. 9 Mine, Slope, No. 9 Kentucky Series, Seam 4 to 6 ft. thick Washery at Coke Ovens.
PO—Earlington, Ky. SP—Same. CTY—Hopkins. RR—L. & N., (H. Div).
MS—E. R. Barnett, .. Earlington, Ky.
S of H—Mules, rope and 2 elec. loco. Track gauge 44 inches.
S of M—15 comp. air machines.
PP—2 return tubular boilers. Electricity and air furnished from No. 11 Mine.
EMP—190. Last fiscal year output 169,725 tons. 155 Bee Hive Coke ovens.

No. 11 Mine, Drift, No. 11 Seam, 5 ft. 10 in. to 7 ft. thick.
PO—Earlington, Ky. SP—Same. CTY—Hopkins. RR—L. & N., (H. Div).
MS—Henry Wyatt.....Earlington, Ky.
S of H—Mules, 1 elec. and 1 steam loco.; track gauge 44 in.
S of M—12 Comp. air mach.
PP—6 Return tubular boilers, total 800 H. P., 1 General Electric low pressure 500 K. W. Turbine, 1 general Electric high pressure 200 K. W. Turbine, 2300 volts A. C., 60 cycle 3-phase.
EMP—190. Last fiscal year output 155,641 tons.

Hecla Mine, Drift, No. 9 Seam, 4½ to 5 ft. thick.
PO—Earlington, Ky. SP—Same. CTY—Hopkins. RR—L. & N., (H. Div).
MS—Wm. Jennings....Earlington, Ky.
S of H—Mules and 2 elec. loco., track gauge 37½ in.
S of M—5 elec. machines.
PP—Electricity furnished from No. 11 Mine.
EMP—145. Last fiscal year output 112,665 tons.

Diamond Mine, Drift, No. 9 Seam, 4 ft. 4 in. to 5 ft. thick.
PO—Mortons Gap, Ky. SP—Mortons. CTY—Hopkins. RR—L. & N. (H. Div.)
MS—J. Henry Harris, Mortons Gap, Ky.
SM—Henry L. Browning, " "
S of H—Mules and 2 elec. loco., track gauge 44 in.
S of M—14 Comp. air machines.
PP—4 Return tubular boilers, total 600 H. P., 1 125-K. W. Gen. unit, 250 volts D. C., 3 air comp.
EMP—200. Last fiscal year output 172,571 tons.

Arnold Mine, Drift, No. 9 Seam, 4 to 5 ft. thick.
PO—Earlington, Ky. SP—Same. CTY—Hopkins. RR—L. & N., (H. Div).
MS—John Rule, ... Earlington, Ky.
MS-Asst—Lee Nichols, " "
S of H—Mules and 2 elec. loco., track gauge 44 in.
S of M—15 comp. air mach.
PP—5 Return tubular boilers, total 750 H. P., 1 150-K. W. gen. unit and 1 75-K. W. gen. unit, 250 volts D. C., 3 air comp.
EMP—200. Last fiscal year output 170,496 tons.

Arnold No. 2, Drift, No. 11 Seam, 5 ft. 10 in. to 7 ft. thick.
PO—Earlington, Ky. SP—Same. CTY—Hopkins. RR—L. & N., (H. Div).
MS—John Rule, ... Earlington, Ky.
MS-Asst—Geo. T. Sadler. Earlington, Ky
S of H—Mules and 2 elec. loco. Track gauge 44 in.
S of M—10 comp. air mach.
PP—Power and air from Arnold No. 1.
EMP—100. Last fiscal year output 133,907 tons.

St. Charles Mine, Drift, No. 9 Seam, 4½ to 5 ft. thick.
PO—St. Charles, Ky., SP Same, CTY—Hopkins. RR—Ill. cent. (Lou. Div.)
MS—Willis T. Sisk...St. Charles, Ky.
SM—Jesse Phillips, " "
S of H—Mules, and 2 elec. loco., track gauge 44 in.
S of M—18 comp. air machines.
PP—4 Return tubular boilers, total 600 H. P., 1-125 K. W. gen. unit 250 volts D. C.
EMP—225. Last fiscal year output 224,746 tons.

Luton Mine, Shaft, No. 9 Seam, 5 to 6 ft. thick.
PO—Providence, Ky., SP—Same, CTY—Webster; RR—L. & N. (H. Div.)
MS—Thos. L. Gaddis..Providence, Ky.
SM—Joseph Teague, " "
S of H—Mules; track gauge 44 in.
S of M—5 comp. air mach.
PP—1 Return tubular 150 H. P. boiler, 1 air comp.
EMP—60. Last fiscal year output 49,337 tons.

Shamrock Mine, Shaft, No. 11 Seam, 5 ft. 10 in. to 6½ ft. thick.
PO—Providence, Ky., SP—Same, CTY—Webster. RR—L. & N. (H. Div.)
MS—John T. Harland..Providence, Ky.
SM—Joseph Teague, " "
S of H—Mules, rope and 1 gasoline motor; track gauge 44 in.
S of M—14 Comp. air machines.
PP—4 Return tubular boilers, total 600 H. P., 2 air comp.
EMP—225. Last fiscal year output 205,148 tons.

SAGAMORE COAL CO.
See Lower-Hignite Coal Co.

SANDY RIVER COAL CO.
General Office, Chicago, Ill.
Sandy River Mine, Drift; "No. 4" Seam, 46 to 48 in. thick.
PO—Williamsport, Ky.; SP—Offutt, and Lower Greasy, Ky.; CTY—Johnson; RR—C. & O.
PR—F. A. Stacey.....Chillicothe, O.
TR—J. P. Dieter.....Chicago, Ill.
GM—J. P. Dieter, " "
PA—C. C. Ward.....Williamsport, Ky.
MS—C. C. Ward, " "
SM—C. C. Ward, " "
S of H—Mules, and 2 Steam loco; track gauge 42 in.
S of M—Hand.
EMP—48. Last fiscal year output 18,000 tons.

SEBREE MINING & FUEL COMPANY.
Succeeded by New Sebree Coal Mining Co.

SEBREE MINING CO., INC.
Sebree Mine; Shaft; No. 9 Seam.
PO—Sebree, Ky.; SP—Same; CTY—Webster; RR—L. & N.
TR—Percy B. Smith.....Sebree, Ky.
PA—Percy B. Smith, " "
GS—J. B. Brown, " "
S of H—Mules.
S of M—Hand.

SHARON COAL & COKE CO.
Sharon Mine; Drift; Freeburn Seam, 48 to 60 in. thick.
PO—Sharondale, Ky.; SP—Same; CTY—Pike; RR—W. & P. C.
PR—J. J. Tierney....Philadelphia, Pa.
TR—J. L. Tierney....Bluefield, W. Va.
GM—O. W. Evans....Sharondale, Ky.
GS—O. W. Evans, " "
PA—O. W. Evans, " "
MS—W. M. Billips, " "
MM—W. S. Keisling, Sharondale, Ky.
EE—W. S. Keisling, " "
S of H—2 Elec. loco.; track gauge, 48 in.
S of M—3 Elec. mach.
PP—Return tubular boilers, total 600 H. P., gen. unit, 250 volts D. C.
EMP—50. Output from May 18 to Dec. 31, 1914, 38,987 tons.

SHELBY COAL MINING CO (THE)
General Office, Warren, Ohio.
Mine, Drift, Upper Elkhorn Seam, 5½ ft. thick.
PO—Shelbiana, Ky., SP— Shelby, Ky., CTY—Pike. RR—C. & O.
PR—Dan Geiger.....Warren, Ohio.
TR—L. L. Jones, " "
GM—E. F. Peirce.....Ashland, Ky.
MS—B. L. Blair.....Shelbiana, Ky.
S of H—Mules; track gauge 42 in.
S of M—Hand.

SMITH MILLS COAL & MINING CO.
Smith Mills Mine; Shaft, No. 12 Seam, 6½ to 7 ft. thick.
PO—Smith Mills, Ky., CTY—Henderson; RR—Not on R. R.
PR—Dr. J. W. Cooper, Smith Mills, Ky.
TR—W. W. Cooper, " "
GM—W. W. Cooper, " "
PA—W. W. Cooper, " "
CE—R. D. Ousbourn.

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SMITH MILLS COAL & COKE MNG CO.—CONTINUED.
S of H—Mules; track gauge 34 in.
S of M—Hand.
PP—2 Boilers.
EMP—8. Last fiscal year output 5,000 tons.

SMITH & RILEY COAL CO.
PO—Barbourville, Ky.; SP—Same; CTY—Knox.
No report.

SNEAD & MEGUIRE COAL CO.
See Lick Branch Coal Co.

SOUTH EAST COAL CO.
General Office, 1732 Commercial Trust Building, Philadelphia, Pa.
Elkhorn Seam.
PO—Fleming, Ky.; SP—Seco, Ky.; CTY—Lescher; RR—Louisville & Nashville, L. & E. Div.
PR—A. D. W. Smith, Philadelphia, Pa.
TR—A. D. W. Simth, "
GM—H. LaViers.....Paintsville, Ky.
ASST. MGR.—Richard Williams, Fleming, Ky.

SOUTHERN MINING CO.
General Office, Williamsburg, Ky.
Toms Creek Mines, Drift, Mason Seam, 51 in. thick.
PO—Balkan, Ky., SP—Same, CTY—Bell; RR—L. & N., Toms Creek Br.
PR—A. Gatliff .... Williamsburg, Ky.
TR—E. C. Mahan....Knoxville, Tenn.
GM—T. B. Mahan...Williamsburg, Ky.
GS—C. B. Richardson.....Varilla, Ky.
PA—E. R. Roberts.....Balkan, Ky.
SM—E. R. Roberts, "
MS—J. C. Glancy.....Balkan, Ky.
EM—F. E. Gilbert, "
MM—G. D. Benjay.....Balkan, Ky.
EE—G. M. Strader, "
S of H—5 Elec. loco., track gauge 44 in.
S of M—6 Elec. mach.
PP—Buy power.
EMP—205. Last fiscal year output 123,819 tons. Sales Agency, Southern Coal & Coke Co., Knoxville, Tenn.

STANLEY COAL CO.
Margrette Mine; Drift; No. 1 Elkhorn Coking Seam, 42 to 56 in. thick.
PO—Lackey, Ky.; SP—Same; CTY—Floyd; RR—C. & O., Beaver Creek Br.
PR—A. J. Johnson.....Lackey, Ky
GM—A. J. Johnson, "
PA—A. J. Johnson, "
MS—J. O. Johnson, "
MM—Wm. H. Johnson, "
EE—Wm. H. Johnson, "
SCO—Wm. Sturgill & Son, "
S of H—Mules; track gauge 36 in.
S of M—Hand.
New operation.

STEARNS COAL & LUMBER CO (THE)
General Office, Stearns, Ky.
PR—J. S. Stearns.....Ludington, Mich.
TR—R. L. Stearns.....Stearns, Ky.
GM—J. E. Butler, "
PA—R. W. Henderson, "
SM—K. W. Dyas, "
EM—George Humble, "
MM—C. L. Larmie, "
Sales Agent, K. W. Dyas, Stearns, Ky.

No. 1 Mine, Drift; No. 2 Seam, 4 to 5 ft. thick.
PO—Barthell, Ky.; SP—Same CTY—McCreary; RR—K. & T.
MS—J. M. McGuffey....Barthell, Ky.
S of H—3 Elec. loco. and mules; track gauge 42 in.
S of M—Elec.
PP—Central Station, 5 pumps.
EMP—150. Last fiscal year output 95,993 tons.

No. 4 Mine, Slope; No. 1 Seam, 2 to 8½ ft. thick.
PO—Worley, Ky.; SP—Same; CTY—McCreary; RR—K. & T.
MS—Jos. Cain.....Worley, Ky.
SM—E. S. Stephens, "
S of H—4 Elec. loco. and mules; track gauge 42 in.
S of M—4 Elec. and 12 comp. air mach. and hand.
PP—Central Plant, 1 comp., 5 pumps.
EMP—375. Last fiscal year output 165,005 tons.

No. 2 Mine; Drift; No. 2 Seam, 3½ to 5 ft. thick.
PO—Barthell, Ky.; SP—Same; CTY—McCreary; RR—K. & T.
MS—J. M. McGuffey....Barthell, Ky.
SM—Geo. Walker, "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—25. Last fiscal year output 2,860 tons.

Nos. 10 and 11 Mines; Drift; No. 1 Seam, 3 to 6 ft. thick.
PO—Yamacraw, Ky.; SP—Same; CTY—McCreary; RR—K. & T.
MS—W. T. Head, ... Yamacraw, Ky.
SM—P. M. Stephens, "
S of H—3 gasoline loco. and mules; track gauge 42 in.
S of M—Hand.
PP—Central Plant.
EMP—400. Last fiscal year output 235,862 tons.

STEELE COAL CO. (THE)
General Office, ... Dayton, O.
Steele and Cabin Branch Mines, Slope No. 4 Seam, 60 in. thick.
PO—Mossy Bottom, Ky. SP—Wagner, Ky. CTY—Pike. RR—C. & O., Big Sandy Division.
MS—Joseph Smith....Mossy Bottom, Ky.
S of H—Mules and 1 Elec. loco.; track gauge 48 in.
S of M—5 elec. machines.
PP—2 Erie City water tube boilers, total, 250 H.P., 2 gen. units, 250 volts D. C., and 1 pump.
EMP—125. Last fiscal year output 88, 208 tons.

PR—Edward B. Wright, " "
TR—Edward B. Wright, " "
GM—Edward B. Wright, " "
GS—S. A. Gantz....Mossy Bottom, Ky.
PA—S. A. Gantz, " "
EM—Stoney Amick, .. Pikeville, "
SCO—The Steele Coal Co. Store. Buyer, Samuel Sutton, Mossy Bottom, Ky. Sales agents, The Sheridan Coal Co., Dayton, O.

STIRLING COAL CO., INC.
Daniel Boone Mine, Slope, No. 11 Seam, 6½ ft. thick.
PO—Daniel Boone, Ky. SP—Same. CTY—Hopkins. RR—I. C.
PR—J. L. Montgomery, Dan'l Boone, Ky
TR—Hugh A. McMullen, Cumberland, Ky.
SEC—Jas. P. Barrett, " "
GM—J. L. Montgomery, Daniel Boone, Ky.
PA—J.L. Montgomery, Dan'l Boone, Ky.
MS—John Hughett, " "
EE—W. E. Compton, " "
CE—W. A. McDonald, Central City, "
EM—W. A. McDonald, " "
SM—O. H. Carter, Daniel Boone, "
S of H—Rope.
S of M—5 elec. mach.
PP—3 return tubular boilers, 1 gen. unit 250 volts D. C., 1 pump.
EMP—129. Last fiscal year output 126,265 tons.

STONY FORK COAL CO.
Stony Fork and Ralston Mines, Drifts.
PO—Ralston, Ky. SP—Stony Fork, Ky. CTY—Bell. RR—L. & N., Sou.
GM—Chas. E. Ralston, Middlesboro, Ky.
PA—A. D. Van Gorder, Ralston, "
SM—A. D. Van Gorder, " "
S of H—Rope and mules.
S of M—Comp. air mach.

STURGEON CREEK COAL CO.
General Office, Beattyville, Ky.
Idamay Mine; Drift; Beattyville Seam, 32 to 42 in. thick.
PO—Idamay, Ky.; SP—Same; CTY—Lee; RR—L. & N., Sturgeon Branch.
PR—H. D. Parrish, Beattyville, Ky.
PA—H. D. Parrish, " "
TR—G. W. Gourley, " "
MS—G. H. Jackson, " "
S of M—Hand.
S of H—Mules; track gauge, 42 in.
PP—1 Pump.
EMP—15.
Output, 7,126.45 Tons.
Sales Agency, Pluto Coal Co., Lexington, Ky.

SUNSET COAL CO.
Royal Mine, Shaft, No. 9 Seam.
PO—Madisonville, Ky. SP—Same. CTY—Hopkins. RR—L. & N.
GM—W. D. Coil, .. Madisonville, Ky.
PA—W. D. Coil, " "
SM—H. H. Coil, " "
S of H—Elec. loco. and mules.
S of M—Elec.
PP—2 Gen. units, 175-250 volts D. C.
EMP—129.

TAYLOR COAL CO. OF KY.
Taylor Mine, Drift, No. 9 Seam, 4 ft. 2 in. to 6 ft. thick.
PO—Beaver Dam, Ky.; SP—Same; CTY—Ohio RR—Illinois Central.
PR—W. S. Speed, ... Louisville, Ky
TR—C. D. Major, " "
GS—I. P. Barnard, " "
GM—M. M. Bardwell, Beaver Dam, "
PA—M. M. Bardwell, " "
MS—Geo. Smith, " "
EM—R. H. Shelly, " "
CE—R. H. Shelly, " "
MM—M. A. Hudson, " "
EE—N. Barrass, " "
SCO—Taylor Coal Co. of Kentucky, buyer, Guy Stateler, McHenry, Ky.
SM—Wm. Vaughn, .. Beaver Dam, Ky.
S of H—Mules and elec. loco. Track gauge 39 in.
S of M—25 comp. air mach.
PP—3 water tube boilers, total H. P. 850., 2 gen. units, 250 volts D. C., 2 air compressors, 9 pumps.
EMP—240. Last fiscal year output 175,000 tons. Sales agency, B. F. Reed, Louisville, Ky.

THACKER COAL MINING CO.
Thacker and Alma Mines; Drift; Thacker Seam, 46 to 72 in. thick.
PO—Rose Siding, W. Va. SP—Same. CTY—Pike; RR—N. & W.
PR—J. K. Anderson, Charleston, W.Va.
TR—J. K. Anderson, " "
GM—J. K. Anderson..Charleston, W.Va.
PA—G. M. Slaughter, Rose Siding, W.Va.
MS—J. G. Hinkle, " "
SM—S.B. Cox, " "
S of H—Mules. Track gauge 48 in.
S of M—11 comp. air mach.
PP—2 boilers, total 200 H. P., 1 air comp.
EMP—78. Last fiscal year output 89,363 tons.

THAYER, N. (Est.) Ky Properties.
General Office, Riverton, Ky.
Lost Creek Mine, Drift, Kentucky No. 7 Seam, 38 to 48 in. thick.
PO—Partlow, Ky. SP—Willard, Ky. CTY—Carter.
GM—Sturgis G. Bates, ..Riverton, Ky.
PA—Sturgis G. Bates, " "
MS—Lewis Duncan, ... Partlow, "
SCO—Willard Store, buyer, D. F. Webb, Partlow, Ky.
S of H—Mules. Track gauge, 36 in.
S of M—Hand.
EMP—35. Last fiscal year output 14,860 tons.

TIERNEY MINING CO.
Tierney Mines, 1, 2 and 3 Drifts, Freeburn Seam, 5 ft. thick.
PO—Stone, Ky. SP—Same. CTY—Pike. RR—W. & P. C.
PR—L. E. Tierney,..Powhatan, W. Va.
TR—L. H. Clark, ... Kyle, "
GM—R. H. Heyser, ... Stone, Ky.
PA—Oscar Hypes, " "
CE—W. Prockter, " "
EM—W. Prockter, " "
EE—G. M. Martin, " "
MS—P. J. Doolan, " "
SM—M. M. Strong, " "
S of H—3 Elec. loco.; track gauge 44 in.
S of M—6 Elec. mach.
PP—3 return tubular boilers, total 450 H.P., 1 gen. unit, 250 volts D. C. Last fiscal year output, 120,000 tons.

TROSPER COAL CO. (THE)
Bennett No. 1 Mine, Drift, Dean Seam, 6 ft. thick.
PO—Bradel, Ky. SP—Bennettsville, Ky. CTY—Knox. RR—Cumberland RR.
PR—J. T. Bradley, ... Bradel, Ky.
TR—S. W. McComb, .. Jellico, Tenn.
GM—J. T. Bradley, ... Bradel, Ky.
PA—J. T. Bradley, " "
MS—J. Q. Angel, " "
SM—W. D. Ellison, " "
S of H—Mules and 1 gasoline loco.; track gauge 42 in.
S of M—10 Comp. air machines.
PP—3 Atlas return tubular boilers, total 450 H. P., 2 air comp. and 2 pumps.
EMP—75. Last fiscal year output 61,240 tons.

TUNNELL JELLICO COAL CO.
PO—Barbourville, Ky. CTY— Knox.
No report.

TURKEY GAP COAL & COKE CO.
General Office, Ennis, W. Va.
Freeburn Nos. 1 and 2 Mines, Drift.
PO—Edgarton, W. Va. SP—Arrow, Ky. CTY—Pike. RR—Sou.
GM—E. J. McQuail, .. Ennis, W. Va.
PA—J. P. Curtis, .. Edgarton, "
EM—C. H. Deaton, " "
MS—Jas. Houn, " "
SM—J. P. Curtis, " "
S of H—Elec. loco.
S of M—Elec. mach.
PP—Gen. unit D.C.
EMP—350.

TWAY, R. C. MINING COMPANY.
General Office, Louisville, Ky.
Tway Mine, Drift, 42 to 46 in. thick.
PO—Anchor, Ky. SP—Same. CTY—Knox. RR—Cumberland.
PR—R. C. Tway, ... Louisville, Ky.
TR—W. F. Burwinkle, " "
MS—M. Cecil.....Anchor, Ky.
SM—M. T. Lindsay, " "
S of H—Mules. Track gauge 42 in.
S of M—10 comp. air machs.
PP—boilers, total 275 H.P., 1 pump. Capacity 300 tons per day. Only operated since June. Sales agent, R. C. Tway Coal Co., Louisville, Ky.

TYE-WHEELER COAL CO.
PO—Elys, Ky.; CTY—Knox.
In the hands of a receiver June 20, 1915.

UNIONTOWN COAL & MINING CO.
Uniontown Mine, Shaft, "No. 11" Seam, 5 ft. thick.
PO—Uniontown, Ky. SP—Same. CTY—Union. RR—I. C.
PR—S. P. Hughes, .. Uniontown, Ky.
TR—B. C. Davison, " "
GM—B. C. Davison, " "
PA—B. C. Davison, " "
MS—Wm. Hammond, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 boilers, total 130 H. P., 2 pumps.
EMP—26. Last fiscal year output 12,282 tons.

VICTOR FUEL CO.
Diamond Block Mine; Shaft; No. 9 Seam, 66 in. thick.
PO—Drakesboro, Ky.; SP—Same; CTY—Muhlenberg; RR—L. & N., O. & N. Div.
PR—J. R. Allen, ...Drakesboro, Ky.
TR—Viva Thompson, " "
GM—J. M. Thompson, " "
EM—George Wales, " "
EE—James Meracle, " "
SCO—Address the Company.
S of H—1 Elec. loco; track gauge, 36 in.
S of M—8 Elec. Mach.
PP—2 Return tubular boilers, total 300 H.P., 1 gen. unit 250 volts D.C., 3 pumps.
Sales Agent, F. A. Vaughan.

VICTORIA COAL CO.
PR—Jas. R. Rash.....Earlington, Ky.
TR—Paul P. Price, " "
GM—F. D. Rash, " "
PA—W. E. Rash, " "
CE—R. E. Whipple, " "
EE—U. W. Umstead, " "

Victoria No. 11 Mine; Shaft; No. 11 Seam, 72 to 78 in. thick.
PO—Madisonville, Ky.; SP—Same; CTY—Hopkins; RR—L. & N.
S of H—1 Elec. loco and mules; track gauge 43 in.
S of M—10 Comp. air machs
PP—2 Compressors.
EMP—100.

Victoria No. 9 Mine; Shaft; No. 9 Seam, 60 in. thick.
PO—Madisonville, Ky.; SP—Same; CTY—Hopkins; RR—L. & N.
S of H—Mules.
S of M—2 Comp. air mach.
EMP—20.

VULCAN COAL COMPANY.
Vulcan Mine, Drift, "Vulcan" or "Freeburn" Seam, 3 ft. 4 in. to 7 ft. 6 in. thick.
PO—Vulcan, W. Va. SP—Delmorme, W. Va. CTY—Mingo. RR—N. & W., Main Line.
PR—W. C. Stephenson, Roanoke, Va.
TR—W. C. Stephenson, " "
GM—Roger Martin.....Vulcan, W.Va.
PA—F. C. Thornton, " "
SM—F. C. Thornton, " "
MS—George Foster, " "
EM—R. F. Haskins, Bluefield, W. Va.
S of H—Mules, 1 gasoline and 1 elec. loco. Track gauge 56½ in.
S of M—Hand.
PP—2 return tubular boilers, total 250 H.P., 1 gen. unit, 250 volts D.C.
EMP—108. Last fiscal year output 82,759 tons.

WALLINS CREEK COAL CO.
General Office, Pineville, Ky.
Black Star and Aldrian Mines; Drift; Wallins Creek Seam, 78 to 96 in. thick.
PO—Wallins Creek, Ky.; SP—Wallins, Ky.; CTY—Harlan; RR—L. & N., W. & B. M. Br.
PR—F. D. Wood.....Pineville, Ky.
GM—F. D. Wood, " "
TR—C. J. Johnson, " "
GS—R. B. Wickler..Wallins Creek, "
SCO—Address the Company, Wallins Creek, Ky.
S of H—Mules; track gauge, 42 in.
S of M—3 Electric machines.
PP—2 Return tubular boilers, total 200 H. P., gen. unit, 100 K. W., 250 volts D. C.
EMP—125. Last fiscal year output, 125,000 tons.

WASHINGTON COAL CO.
Mogroe Mine.
PO—Providence, Ky.; CTY— Webster.
No report.

WATTS CREEK JELLICO COAL CO.
Watts Creek Mine, Drift, Seam 46 in. thick.
PO—Wofford, Ky. SP—Coalmont, Ky. CTY— Whitley. RR—L. & N. RR.
PR—J. W. Latham, ... Wofford, Ky.
TR—J. Robt. Zimmerman, " "
GM—J. Robt. Zimmerman, " "
MS—Frank Cox, " "
SM—Howard Thomas, " "
S of H—Mules Track gauge, 36 in.
S of M—Hand.

WAVERLY COAL CO.
Shaft Mine; No. 11 Seam, 60 in. thick.
PO—Waverly, Ky.; SP—Same; CTY—Union; RR—I. C.
PR—R. C. Arnold, Waverly, Ky.
PA—R. C. Arnold, " "
MS—P. Connoley, " "
S of H—Mules.
S of M—Hand.
EMP—65.
Successors to the Drury Coal Co.

WEST JELLICO COAL CO.
West Jellico Mine, Drift, No. 4 Seam.
PO—Silerville, Ky. SP—Same. CTY—McCreary, RR—C.N.O.&T.P.
I. N. Frost, Lessee. No report.

WEST KENTUCKY COAL CO.
General Office, Sturgis, Ky.
PR—J. D. Mortimer, 30 Broad St., New York, N. Y.
TR—Asst, C. D. Burdick, Sturgis, Ky.
VP—C.F. Richardson, " "
GM—C.F. Richardson, " "
GS—T.E. Jenkins, " "
PA—W.S. Williams, " "
EM—C. W. Strickland, " "
EE—Sherman Melton, " "
SCO—West Kentucky Coal Co. Buyer, H.H.Smith, " "
Sales agency, West Kentucky Coal Co., Paducah, Ky.

Nos. 1 and 2 Mines, No. 1 Slope and No. 2 Shaft, No. 9 Seam, 4 ft. 10 in. thick.
PO—Sturgis, Ky. SP—Same. CTY—Union; RR—Ill. Cent., Evansville Branch.
MS—H.M. Ernst, ... Sturgis, Ky.
S of H—Mules, rope and 2 Elec. loco. Track gauge No. 1, 36 in. and No. 2 40 in.
S of M—9 Elec. mach.
PP—3 Milne water tube and 2Atlas return tubular boilers, total 1,050 H. P., 2 gen. units, 250 volts D.C., 3 hoisting engines and 2 fan engines, 2 pumps.
EMP—163. Last fiscal year output 197,587 tons.

Nos. 3 and 4 Mines; Slopes; No. 11 Seam, 6 ft. thick.
PO—Wheatcroft. Ky. SP—Same. CTY Webster; RR—Ill. Cent., Dixon Br.
MS—J.W. Martin, .. Wheatcroft, Ky.
S of H—Mules and 5 elec. loco. Track gauge 40 in.
S of M—9 elec. machines.
PP—2 Atlas and 2 C. J. Walton return tubular boilers, total 600 H. P., 4 gen. units, 500 volts, D. C. 2 pumps.
EMP—157. Last fiscal year output 183,975 tons.

No. 5 Mine, Shaft, No. 12 Seam, 6 ft. thick.
PO—Clay, Ky. SP—Wheatcroft, Ky. CTY—Webster. RR—Ill. Central. Dixon Br.
MS—James Palmer.....Clay, Ky.
S of H—Mules and 2 elec. loco. Track gauge 3 ft.
S of M—4 elec. machines.
PP—2 C. J. Walton return tubular boilers total 300 H. P., gen. unit 250 volts D. C.; hoisting engine and fan engine, 1 pump.
EMP—74. Last fiscal year output, 79,079 tons.

No. 6 Mine, Shaft, No. 9 Seam, 4 ft. 10 in. thick.
PO—Wheatcroft, Ky. SP—Same. CTY—Webster; RR—Ill. Cent., Dixon Br.
MS—J. W. Martin, ..Wheatcroft, Ky.
S of H—Mules and 2 elec. loco. Track gauge 40 in.
S of M—3 Elec. mach.
PP—1 C. J. Walton return tubular boiler, 150 H.P., 1 hoisting engine and 1 fan engine, 1 pump.
EMP—69. Last fiscal year output 75,481 tons.

No. 7 Mine, Shaft, No. 12 Seam, 7½ ft. thick.
PO—Clay, Ky. SP—Same. CTY—Webster. RR—L. & N., Ill. Cent. ster; RR—L. & N., Ill. Cent., Dixon Br.
MS—James Palmer.....Clay, Ky.
S of H—Mules and 3 elec. loco. Track gauge 3 ft. 4 in.
S of M—10 Elec. mach.
PP—4 C. J. Walton return tubular boilers, total 600 H. P., 2 gen. units, 250 volts D. C., 2 hoisting engines and 1 fan engine, 1 pump.
EMP—203. Last fiscal year output 294,289 tons.

Nos. 8 and 9 Mines, Slope and Shaft, No. 9 Seam, 4 ft. 10 in. thick.
PO—Sturgis. Ky. SP—Same. CTY—Union; RR—Ill. Cent., Evansville Br.
MS—H. M. Ernst, ... Sturgis, Ky.
S of H—Mules, rope and 1 Elec loco.; track gauge 40 in.
S of M—7 Elec. machines.
PP—5 C. J. Walton return tubular boilers, total 750 H. P., 2 gen. units, 500 volts D. C., 2 pumps, 2 hoisting engine and 1 fan engine.
EMP—140. Last fiscal year output 139,595 tons.

WHEELER COAL CO.
PO—Elys, Ky.; CTY—Knox.
No report.

WILLIAMS COAL CO.
Williams Mine, Shaft and Slope, No. 9 Seam, 4 ft. 2 in. to 6 ft. thick.
PO—McHenry, Ky. SP—Same. CTY—Ohio. RR—Ill. Central.
PR—I. P. Barnard, .. Louisville, Ky.
TR—C. D. Fraser, " "
GM—M.M. Bordwell, Beaver Dam, "
PA—M. M. Bordwell, " "
MS—Andrew Thorpe, .. McHenry, "
CE—R.H. Shelly,.. Beaver Dam, Ky.
EM—R.H. Shelly, " "
MM—M.A. Hudson, " "
EE—A. McDowell, ...McHenry, "
SCO—Williams Coal Co. Store, buyer Guy Stateler, McHenry, .Ky
S of H—Mules and 4 elec. locos. Track gauge 39 in.
S of M—25 comp. air mach.
PP—3 air comp., 10 pumps, 2 water tube boilers, total H. P. 600, 2 gen. units, 250 D.C.
EMP—248. Last fiscal year output 160,000 tons. Sales agency, B. F. Reed, Louisville, Ky.

WILSON, MRS. JAMES.
Bon Harbor Mine, Drift, 4½ to 5½ ft. thick.
PO—Owensboro, Ky. SP—Mattingly, Ky. CTY—Daviess. RR—L. H. & St. L.
PR—Mrs. James Wilson, Owensboro, Ky.
TR—Mrs. James Wilson, " "
GM—Mrs. James Wilson, " "
GS—Jas. Goodwin, " "
S of H—Mules. Track gauge 40 in.
S of M—Hand.
PP—1 pump.
EMP—9. Last fiscal year output 8,026 tons.

WINONA COAL & COKE CO.
General Office, Middlesboro, Ky.
Winona Mine, Drift, Turner Seam, 4 ft. thick. Operate washery.
PO—Gravity, Ky. SP—Middlesboro, Ky. CTY—Bell. RR—L. & N., South.
PR—J. L. Manring, Middlesboro, Ky.
GM—J. L. Manring, " "
TR—W.E. Capple, " "
EM—J. C. Ritcherson, " "
MS—E. R. Short, " "
SM—Robert Lyons, " "
S of H—1 elec. loco. Track gauge 36 in.
S of M—Hand.
PP—Elec. D. C. and A. C. Power purchased 3 pumps.
EMP—120. Last fiscal year output 50,000 tons.

WISCONSIN STEEL CO.
General Office, Harvester Bldg., Chicago, Ill.
"C" and "D" Mines; Drifts Seams 49 to 100 in. thick.
PO—Benham, Ky. SP—Same. CTY — Harlan. RR—L. & N., W. & B. M. Branch.
PR—H.F. Perkins, ... Chicago, Ill.
TR—W. M. Gale, " "
GS—W. C. Tucker, ... Benham, Ky.
PA—W. C. Tucker, " "
EM—T. C. Miller. " "
MM—W. F. Nanstiel, " "
MS—R. R. Schellenger, " "
SCO—Benham Store, " "
SM—Sam L. Spradlin, " "
S of H—12 Elec. loco.; track gauge 44 in.
S of M—13 Elec. mach.
PP—4 Sterling water tube boilers, total 1,400 H. P., 3 gen. units, 250 volts D. C., and 1 pump.
EMP—542. 408 Bee Hive coke ovens. Last fiscal year output, 275,000 tons.

WOLF VALLEY COAL CO.
Drift Mines; Nos. 6 and 7 Seams, 36 to 58 in. thick.
PO—Roosevelt, Ky.; SP—Wolfcoal, Ky.; CTY—Breathitt; RR—L. & N.
PR—T. C. Loucks, 203 Dearborn St., Chicago, Ill.
TR—T. C. Loucks, 203 Dearborn St., Chicago, Ill.
CE—J. D. Hurd, 203 Dearborn St., Chicago, Ill.
GS—Thomas H. Green, Roosevelt, Ky.
PA—Thomas H. Green, " "
EM—Harry Rissell, " "
EE—L. G. McLoed, " "
SCO—Wolfcoal Trading Co., " "
S of H—3 Elec. loco.; track gauge 42 in.
S of M—3 Elec. mach.
PP—2 Return tubular boilers, total 300 H.P., 2 gen. units 250 volts D.C.
Sales Agency, Glenridge Coal Co., 203 Dearborn St., Chicago, Ill.

YELLOW CREEK COAL CO.
Yellow Creek Mine, Drift, 4½ ft. thick. Operate washery.
PO—Bosworth, Ky. SP—Middlesboro, Ky. CTY—Bell. RR—L. & N. and Southern Rys., Middleboro RR.
PR—J. G. Fitzpatrick. Middlesboro, Ky.
TR—E.S. Helburn, " "
GM—A.H. Rennebaum, " "
PA—J.E. Evans. " "
MS—L. F. Rennebaum....Bosworth, Ky.
SM—Joe F. Bosworth, Jr., " "
EM—J. C. Richardson, Middlesboro, "
S of H—4 elec. locos.
S of M—4 elec. machines.
PP—4 return tubular boilers, total 1,000 H. P., 500 volts.
EMP—250. Last fiscal year output 100,000 tons. Sales agent, E. S. Helburn.

ZION COAL CO.
Zion Mine, Shaft, No. 9 Seam, 3 ft. 10 in. thick.
PO—Henderson, Ky. R.F.D. No. 4. CTY—Henderson.
PR—H.E. Mitchell, Henderson, Ky. R.F.D.4
TR—C.A. Moss, Jr., " "
GM—H. E. Mitchell, " "
PA—H. E. Mitchell, " "
S of H—Mules. Track gauge 2 ft. 3 in.
S of M—Hand, and 1 comp. air mach.
PP—2 return tubular boilers, total 100 H. P., 1 air comp. and 1 pump.
EMP—10. Last fiscal year output 3,200 tons.

MARYLAND

For List of Abbreviations See Page 498.

AMERICAN COAL CO. of Allegany.
General Office, No. 1 Broadway, New York, N. Y.
Caledonia Mine, (5 openings), Drifts, Sewickley Seam, 5 to 7 ft. thick.
PO—Barton, Md. SP—Same. CTY—Allegany. RR—C. & P.
PR—W. Del Walbridge, New York, N.Y.
TR—George M. Bowlby, " "
GS—J.H. Parrott, Roanoke, Va., and McComas, W. Va.
PA—J.T. Dobbie, ..Lonaconing, Md.
MS—J.T. Dobbie, " "
EM—A. F. Green, " "
MM—J. T. Clark ..... Barton, "
S of H—Mules, rope and gravity. Track gauge 36 in.
S of M—Hand.
EMP—43. Last fiscal year output 7,456.55 tons.

BARTON COAL MINING CO., Inc.
General Office, 42 Broadway, N. Y.
Wasco Mine; Drift; Lower Freeport Seam, 42 to 54 in. thick.
PO—Westernport, Md. SP—Barton, Md.; CTY—Alleghany; RR—C. & P., Main Line.
PR—W. F. Jacoby.....New York, N.Y.
PA—W. F. Jacoby, " "
S of H—Mules.
S of M—Hand.
EMP—75. Last fiscal year output, 30,000 tons.

BLACK, SHERIDAN, WILSON CO.
See Union Mining Co.

BRANARD COAL CO.
Now Waltman Smokeless Coal Co.

CHAFFEE COAL CO.
General Office, Real Estate Trust Bldg., Philadelphia, Pa.
Chaffee Mine, Drift, Lower Kittanning Seam, 50 in. to 60 in. thick.
PO—Chaffee, W. Va. SP—Same. CTY—Mineral. RR—Western Maryland.
PR—P. J. Baral,.. Philadelphia, Pa.
TR—P. M. Satterthwaite, " "
GM—Howard D. Pfeiffer....Phila., Pa.
PA—Howard D. Pfeiffer, " "
GS—S. Stottlemeyer, Chaffee, W. Va.
SCO—Three Forks Supply Co., buyer, A. G. Paugh, Chaffee, W. Va.
S of H—Mules, rope and 2 gasoline locos Track gauge 42 in.
S of M—Hand.
PP—150 H.P. return tubular boilers. Present basis 150,000 tons.

CHAPMAN COAL MINING CO.
General Office, Baltimore, Md.
Swanton Mine, Drift, Bakerstown Seam 32 to 36 in. thick.
PO—Barton, Md. SP—Same. CTY — Allegany. RR — Cumberland & Penna.
PR—W.J. Chapman, ..Baltimore, Md.
GM—W. J. Chapman, " "
TR—G. W. Chapman, " "
PA—G. W. Chapman, " "
MS—John D. Frenzel, ..Barton, "
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—100. Last fiscal year output 50,000 tons.

CONSOLIDATION COAL CO. (THE)
General Office, Continental Building, Baltimore, Md.
101 Mines in Md., West Va., Pa., and Ky.
Chairman of Board, C. W. Watson, Baltimore, Md.
PR—J. H. Wheelwright, " "
Secy—T. K. Stuart, " "
Mgr. of Trans—W. L. Andrews, " "
Genl. Auditor—A. S. Dunham, " "
VP—F. S. Landstreet, Bankers Trust Bldg., New York, N. Y.
VP—Geo. T. Watson..Fairmont, W. Va.
TR—S. L. Watson, " "
GM—F. R. Lyon, " "
PA—A. T. Watson, " "
PA—Asst., F. C. Davis, " "
CE—Frank Haas, " "
CE—Asst., J. C. Gaskill, " "
Chief Engineer, All Divisions—John G. Smyth .....Fairmont, W. Va.
Supt. P. & M. Dept.—R. L. Kingsland, Fairmont, W. Va.
Eng. of Tests—R. E. Rightmire, Fairmont, W. Va.
Live Stock Buyer—Frank Amos, Fairmont, W. Va.
Genl. Mgr. of Sales—F. W. Wilshire, Bankers Trust Bldg., New York, N.Y.
Western Mgr. of Sales—E. M. Mancourt. Fisher Bldg., Chicago, Ill.

MGR of Md. Div.—H.V.
Hesse, ... Frostburg, Md.
CE—Md. Div., R. A. Walter, " "
MM—Md. Div., C.E. Tucker. " "
Sales Agent, F W. Wilshire, New York, N Y

Consolidation No. 1 Mine, Slope, Pgh. Seam, 7 ft. 3 in. to 10 ft. 9 in. thick.
PO—Ocean, Md. SP—Same. CTY—Allegany. RR—Cumb. & Penna., Main Line.
MS—Thomas McFarland..Ocean, Md.
S of H—7 comp. air locos, mules and rope. Track gauge 36 in.
S of M—Hand.
PP—11 return tubular boilers, 2 gen. units, 1 250 volts, D. C., 1 2200 volts A.C., 60 cycles, single phase, 3 compressors, 19 pumps.
EMP—500. Last fiscal year output, 401,194 tons.

Consolidation No. 3 Mine, Slope and Drift, Pgh. or Big Vein Seam, 7.1 ft. to 9.8 ft. thick.
PO—Eckhart, R.F.D. Md. SP—Hoffman, Md. CTY—Allegany. RR — Cumb. & Penna., Eckhart Branch.
MS—J. R. Daniels.....Eckhart, Md.
S of H—Mule, 6 comp. air locos. and rope. Track gauge 3 ft.
S of M—Hand.
PP—14 return tubular boilers, 3 gen. units, 125 volts, D.C., 4 comp. 10 pumps to drain tunnel.
EMP—597. Last fiscal year output 439,256 tons.

Consolidation No. 4 Mine, Slope, Pgh. or Big Seam, 6 ft. to 10 ft. thick.
PO—Eckhart, Md. SP—Same. CTY — Allegany. RR—Cumb. & Penna., Eckhart Branch.
Continued on Next Page.

CONSOLIDATION COAL CO.
MS—James Weston, ... Eckhart, Md.
S of H—Mule, 1 elec. loco. and rope. Track gauge 3 ft.
S of M—Hand.
PP—3 return tubular boilers, 1 gen. unit, 250 volts D.C., 8 pumps to drainage tunnel.
EMP—119. Last fiscal year output 80,309 tons.

Consolidation No. 7 Mine, Drift and Slope, Pgh. or Big Seam, 6.1 to 10.4 ft. thick.
PO—Lord, Md. SP—Same. CTY—Allegany. RR—Cumb. & Penna, No. 7 Branch.
MS—Benjamin Bradley, .. Lord, Md.
S of H—Mule and rope. Track gauge 3 ft.
S of M—Hand.
PP—9 return tubular boilers, 3 gen. units, 115 volts D. C., 2 air comp., 7 pumps to drainage tunnel.
EMP—421. Last fiscal year output, 347,911 tons.

Consolidation No. 8 Mine, drift and Slope, Pgh. or Big Seam, 5.7 ft. to 8.8 ft. thick.
PO—Midland, Md. SP—Same. CTY—Allegany. RR—Cumb. & Penna., Main Line.
MS—Christopher Roberts, Midland, Md.
S of H—Mule and rope. Track gauge 3 ft.
S of M—Hand.
PP—1 return tubular boiler.
EMP—138. Last fiscal year output, 114,033 tons.

Consolidation No. 9 Mine, Drift, Sewickley or Tyson Seam, 2.4 ft. to 3.7 ft. thick.
PO—Frostburg, Md. SP—No. 9 Station, Frostburg, Md. CTY—Allegany. RR—Cumb. & Penna., Main Line.
MS—John Casey, ... Frostburg, Md.
S of H—Mule and 1 elec. loco. Track gauge 3½ ft.
S of M—Hand and 2 elec. machines.
PP—2 return tubular boilers, 2 gen. units, 250 volts D.C., 10 pumps.
EMP—207. Last fiscal year output, 119,303 tons.

Consolidation No. 10 Mine, Drift, Sewickley or Tyson Seam, 2.7 ft. to 4 ft. thick.
PO—Eckhart, Md. SP—Same. CTY—Allegany. RR—Cumb. & Penna., Eckhart Branch.
MS—Frank Myers, ... Eckhart, Md.
S of H—Mules and 1 elec. loco.
S of M—Hand.
PP—5 pumps, power from No. 4 Mine.
EMP—112. Last fiscal year output, 69,812 tons.

Consolidation No. 11 Mine, Shaft, Sewickley or Tyson Seam, 2.7 ft. to 3.5 ft. thick.
PO—Frostburg, Md. SP—Same. CTY—Allegany. RR—Cumb. & Penna.
MS—Eugene Layman, .. Frostburg, Md.
S of H—Mule and 1 elec. loco. Track gauge 3½ ft.
S of M—Hand.
PP—4 pumps to drain tunnel. Power from No. 3 Mine.
EMP—103. Last fiscal year output, 59,359 tons.

Consolidation No. 12 Mine, Shaft, Pgh. or Big Seam, 6 ft. to 10.6 ft. thick.
PO—Shaft, Md. SP—Borden Shaft, Md. CTY—Allegany. RR—Cumb. & Penna.
MS—Alex C. Neal, ... Frostburg, Md.
S of H—Mule, 4 comp. air locos. and rope. Track gauge 3 ft.
S of M—Hand.
PP—2 return tubular boilers, 1 gen. unit, 125 volts D.C., 2 air comp. 5 pumps to drainage tunnel.
EMP—292. Last fiscal year output, 285,442 tons.

Consolidation No. 13 Mine, Drift and Slope, Pgh. or Big Seam, 7.3 to 9.2 thick.
PO—Frostburg, Md. SP—Consolidation No. 13. CTY—Allegany. RR—Cumb. & Penna.
MS—John Baben, ... Frostburg, Md.
S of H—Mule and rope. Track gauge 3 ft.
S of M—Hand.
PP—1 Return tubular boiler.
EMP—60. Last fiscal year output, 48,638 tons.

CUMBERLAND BASIN COAL CO.
Sold to Cumberland Company.

CUMBERLAND COMPANY.
General Office, 13 South St. Baltimore, Md.
Closed at present February 18, 1914.

FRANKLIN COAL CO.
PR—H. E. Weber.....Cumberland, Md.
Not operating in the hands of Receivers.

GEORGE'S CREEK COAL COMPANY.
George's Creek Mines, Sections No. 1, 2, 3, and 4. Drift, Pgh. or "Big Seam," 9 to 11 ft. thick.
PO—Lonaconing, Md. SP—Same. CTY—Allegany. RR—Western Md., G. C. & C. Div.
PR—H. E. Weber,....Cumberland, Md.
TR—Robt. L. Stallings, " "
GM—W. F. Coale, " "
MS—J. R. Hamilton, Lonaconing, "
PA—J. R. Hamilton, " "
MM—Theo. Hardegen, " "
S of H—3 elec. locos. Track gauge 42 in.
S of M—Hand.
PP—3 return tubular boilers, total 425 H. P., 2 gen. units, 250 volts D. C.
EMP—380. Last fiscal year output 277,000 tons. Sales agent, W. F. Coale, Cumberland, Md.

HITCHENS, H. & W. A., COAL CO.
Not operating.

JORDAN, S. H.
General Office, Keyser, W. Va.
One Mine in Maryland, one mine in West Va.
Cottage Street Mine, Drift, Freeport Seam, 2 to 7 ft. thick.
PO—Bayard, W. Va. SP—Same. CTY—Grant. RR—W. M. Ry.
SEC—Pope Jordan, .. Keyser, W. Va.
GM—S. H. Jordan, " "
PA—S. H. Jordan, " "
GS—J. T. Jordan, ... Bayard, "
S of H—Mules. Track gauge 36 in.
S of M—Pick.
EMP—25.

MARYLAND COAL CO.
Kingsland Mine; Drift, Tyson Seam.
PO—Lonaconing, Md.; SP—Same; CTY—Alleghany, RR—George's Creek & Cumb.
PR—J. W. Galloway, No. 1 Broadway, N. Y.
GM—J. W. Galloway, No. 1 Broadway, N. Y.
TR—Jas T Russell, No. 1 Broadway, N. Y.
EM—Wilbur E. Schell..Lonaconing, Md.
EE—John Hardigan, " "
MS—Elkins Road, " "
S of H—Mules and 1 Elec. loco., track gauge 42 in.
S of M—Hand.
PP—2 boilers, 200 K. W. M. G. set 250 volts, D. C. and 2 elec. pumps. Power purchased.
EMP—100.

MARYLAND & GEORGE'S CREEK COAL CO.
Mertens Mine, Slope and Drift.
PO—Cumberland, Md. SP—Vale Summit, Md. CTY—Allegany. RR—G. C. & C.
GM—E. D. Baker.....Cumberland, Md.
PA—E. D. Baker, " "
EM—J. V. Maguiniss, " "
MS—John Stepp, " "
S of H—Gasoline and elec. locos.
S of M—Elec. mach. and hand.
PP—4 boilers, total 600 H. P., gen. unit, 500 volts D. C.

MIDLAND MINING CO.
General Office, Cumberland, Md.
Neff Run and Enterprise Mines, Seams, 14 ft. thick.
PO—Midland, Md. SP—Same. CTY—Allegany. RR—C. & P. RR.
PR—J.W.P. Somerville, Cumberland Md
GM—J.W.P. Somerville, " "
PA—J.W.P. Somerville, " "
TR—W.A.S. Somerville, " "
ME—Wm. Harvey, ... Frostburg, Md.
S of H—Horses. Track gauge 36 in.
S of M—Hand.
EMP—75. Last fiscal year output 64,000 tons.

MONROE COAL MINING CO.
Elk Run Nos. 1 and 3 Mines, Drift, "Lower Kittanning Seam," 2 to 6 ft. thick..
PO—Barnum, W. Va. SP—Same. CTY—Mineral. RR—Western Md.
PR—Chas. M. Dodson, Bethlehem, Pa.
TR—Josiah Bachman, " "
PA—G. C. Macfarlane, Barnum, W.Va.
MS—G.C. Macfarlane, " "
SM—E. H. Kight, " "
S of H—Mules and 1 gasoline loco. Track gauge 42 in.
S of M—Hand.
PP—2 return tubular boilers, total 250 H.P., 1 air comp.
EMP—150. Last fiscal year output 42,000 tons. Sales agent Weston Dodson & Co., Inc., Bethlehem, Pa.

MOSCOW-GEORGE'S CREEK MNG. CO.
General Office, Cumberland, Md.
Moscow Nos. 2 and 3 Mines, Drift, George's Creek Big Vein and Bakerstown Seams, 4 to 14 ft. thick.
PO—Barton, Md. SP—Same. CTY—Allegany. RR—C. & P.
PR—J.W.P. Somerville, Cumberland, Md.
PA—J. W. P. Somerville, " "
TR—W. A. S. Somerville, " "
GM—J. W. P. Somerville, " "
MS—E.R. Brennan, ...Barton, "
S of H—Horses and mules. Track gauge 42 in.
S of M—Hand.
EMP—48. Last fiscal year output 45,000 tons.

NEW CENTRAL COAL CO.
General Office, 17 Battery Place, New York City, N. Y.
1 Mine in West Virginia and 2 in Maryland.
No. 1 Koontz and No. 2 Big Vein Mines, Drifts, Sewickley Seam, 3 ft. 8 in. to 3 ft. 4 in. thick.
PO—Lonaconing, Md. SP—Same. CTY—Allegany. RR—Western Maryland, George's Creek & Cumberland.
PR—M. Baxter, Jr.,... New York City
TR—L.L. Hansell, " "
GS—Duncan Sinclair, Fairmont, W.Va.
PA—Alexander Adams, Lonaconing, Md
EM—Geo. S. Phillips, Baxter, W. Va.
MM—Richard Mahaffey, " "
MS—Alexander Adams..Lonaconing, Md.
S of H—Mules and rope. Track gauge 42 in.
S of M—Hand.
PP—2 return tubular boilers, total 160 H. P.
EMP—110. Last fiscal year output 198,321 tons.

NEW YORK MINING CO.
General Office, Mt. Savage, Md.
PR—H. Crawford Black, Baltimore Md.
TR—V. L. Black, " "
GM—W. L. Hamilton, Mt. Savage, "
GS—James Aldom....Mt. Savage, Md.
PA—H. L. Aldridge, " "
EM—R. E. Wilson, " "
MM—Thos. Hill.....Frostburg, Md.
EE—Thos. Hill.....Frostburg, Md.
Sales agency, Black, Sheridan & Wilson Co., Baltimore, Md.
Union No. 1 Mine, Drift, Pgh. Seam, 4½ to 8 ft. thick.
PO—Mt. Savage, Md. SP—Allegany. Md.; RR—W. & M., Cumb. & Penna. RR—W. M., Cumb. & Penna.
MS—James Aldom.....Mt. Savage, Md.
S of H—2 Elec. locos, 2 storage batteries. Track gauge 48 in.
S of M—2 elec. mach.
Union No. 2 Mine, Drift, Pgh. Seam, 4½ to 6 ft. thick.
PO—Allegheny, Md.; SP—Same CTY—Allegany. RR—Cumberland & Penna.
MS—James Aldom....Mt. Savage, Md.
S of H—1 elec. loco. Track gauge 48 in.
S of M—Hand.
PP—3 Erie City return tubular boilers, total 450 H. P., 1 gen. unit, 250 volts D. C.

PATTISON, G. C.
Drift Mine, Seam K.
PO—Bloomington, Md. SP—Same CTY—Garrett. RR—B. & O.
PR—C. C. Pattison, Bloomington, Md.
GS—Carroll Pattison, " "
S of H—Mules. Track gauge, 42 in.
S of M—Hand.
PP—1 return tubular boiler, 20 H.P.
EMP—50.

PHOENIX & GEORGE'S CREEK MNG. CO.
General Office, Stephen Girard Bldg., Philadelphia, Pa.
Elkhart Mine, Drift, Bakerstown or Barton Seam, 30 to 48 in. thick.
PO—Piedmont, W. Va. SP—Same. CTY—Allegany. RR—C. & P.
PR—W. D. Althouse,.... Phila., Pa.
TR—W.D. Althouse, " "
PA—W.D. Althouse, " "
MS—John Rankin, Piedmont, W. Va.
EM—Wm. Harvey, .. Frostburg, Md.
S of H—Mules and storage battery motor. Track gauge 42 in.
S of M—Hand.

PIEDMONT MINING CO.
Out of business.

PIEDMONT & GEORGE'S CREEK COAL CO.
General Office, Frostburg, Md.
PR—John S. Brophy,.. Frostburg, Md.
GM—John S. Brophy, " "
GS—John S. Brophy, " "
TR—Martin Condry " "
PA—Alex. G. Close, " "
EM—George G. Townsend, " "
Sales agent, S. J. Bohannon, 30 Church St., New York, N. Y.

Washington Mine No. 2, Drift, Up. Sewickley Seam, 38 to 46 in. thick.
PO—Eckhart, Md. SP—Same. CTY—Allegany. RR—C. & P., Eckhart Branch.
EE—Harvey Hileman....Frostburg, Md.
MS—Martin Condry, ..Frostburg, Md.
S of H—6 elec. loco. Track gauge 42 in.
S of M—Hand.
PP—2 Atlas return tubular boilers, total 350 H. P., gen. unit, 250 volts, D. C. 1 pump.
EMP—185. Last fiscal year output 130,875 tons.

Washington Mines Nos. 3 and 5, Drift, Kittanning and Bakerstown Seams 42-72 in. thick; RR—C. & P.
PO—Westernport, Md. SP—Gannon's Station, Md. CTY—Allegany.
EE—Wm. Griffith,.. Westernport, Md.
MS—Wm. E. Brown " "
S of H—3 elec, 1 gasoline loco. Track gauge 42 in.
S of M—5 elec. mach. and hand.
PP—1 Keeler, 2 Atlas return tubular boilers, total 350 H. P., gen. unit 250 D.C., 1 pump.
EMP—214. Last fiscal year output 123,741 tons.

POTOMAC VALLEY COAL CO.
See West Virginia data.

REID COAL & COKE CO.
General Office, Phoenix Bldg., Baltimore, Md.
Nos. 1 and 2 Mines, Drift; George's Creek Seam 108 to 168 in. thick.
PO—Frostburg, Md.; SP—Same; CTY—Allegheny; RR—C & P.
S of H—Mules.
S of M—Hand.

UNION MINING CO.
See New York Mng. Co.

WAITMAN SMOKELESS COAL CO.
PO—Steyer, Md.; CTY—Garrett.
No report.
Successor to Branard Coal Co.

MICHIGAN

For List of Abbreviations See Page 498.

BANNER COAL COMPANY.
Banner Mine, Shaft, 30 in. thick.
PO—Saginaw, W. S. Mich, R.F.D. No. 3. SP—Swan Creek, Mich. CTY — Saginaw. RR — Michigan, Central.
PR—M. Jordan, ... Saginaw, Mich.
TR—W.B. Carmichael, " "
GM—W.B. Carmichael, " "
MS—W. A. Jones.....Saginaw, Mich.
PA—Wm. Jocken.....Saginaw, Mich.
EM—Robert Nichol.....Saginaw, Mich.
EE—Godfrey Duncan....Saginaw, Mich.
S of H—Mules. Track gauge 36 in.
S of M—Hand and 2 elec. mach.
PP—3 return tubular boilers, total 450 H. P.,, Erie. 1 generating unit, 250 volts, D.C., 2 pumps.
EMP—125. Last fiscal year output 39,825 tons. Sales agent W. B. Carmichael, 220 Gage St., Saginaw, Mich.

BEAVER COAL CO.
Beaver Mine, Shaft, Seam 3½ ft. thick.
PO—Bay City, Mich. SP—Same. CTY—Bay. RR—Mich. Central.
PR—Chas. Coryell, ..Bay City, Mich.
GM—Chas. Coryell, " "
GS—John Coryell, " "
TR—Jas. E. Davidson, " "
PA—Wm. Reed, " "
MS—Wm. Jones, " "
EE—Wm. Long, " "
ME—Wm. E. Evans, St. Charles, "
S of H—Mules. Track gauge 36 in.
S of M—9 Elec. Short Wall machs.
PP—3 Return Tubular boilers, total 450 H. P., 2 gen. units, 250 volts D.C., 2 pumps.
EMP—150. Last fiscal year output 120,000 tons.

BLISS COAL CO.
Bliss Mine, Shaft.
PO—Swan Creek, Mich. SP—Same. CTY—Saginaw. RR—M. C.
PR—J. F. Brand.....Saginaw, Mich.
TR—C. H. Brand, " "
GM—C. E. Linton, " "
PA—Wm. Reed, " "
MS—J. T. Phillips, " "
S of H—Mules. Track gauge 34 in.
S of M—8 Elec. mach.
PP—4 Boilers, total 320 H. P. gen. unit 250 volts, D. C.
EMP—150. Last fiscal year output, 84,554 tons.

CALEDONIA COAL CO., LTD.
No. 3 Caledonia Mine; Shaft; St Charles Seam, 14 in. thick.
PO—Saginaw, Mich.; SP—Same; CTY—Saginaw.
PR—H. Hawkins.....Saginaw, Mich.
TR—W. Kleinebriel, " "
GM—John Dagan, " "
PA—John Dagan, " "
MS—John Dagan, " "
MM—Frank Kumeen, " "
SCO—Address the Company, " "
S of H—1 Steam loco.
S of M—Hand.
PP—2 Return tubular boilers, total 90 H. P., 1 pump.
EMP—90. Last fiscal year output, 39,806 tons.

CONSOLIDATED COAL CO.
General Office, Saginaw, Mich.
GM—Robt. M. Randall, Saginaw, Mich.
SECY—C. W. Stiver, " "
PA—C. W. Stiver, " "
GS—Bert Russell, " "
MM—Bert Russell, " "
EM—Alexander Liddle, " "
CE—C. H. Lane, " "
SM—C. W. Stiver, " "
P. M. No. 3 Mine, Shaft, Saginaw Seam.
PO—Saginaw, Mich. SP—Same. CTY—Saginaw. RR—P. M., M. C.
MS—Robert Johnson....Saginaw, Mich.
S of H—Elec. loco.
S of M—6 Jeffrey short wall machs.
PP—elec.
EMP—20.

Shiawasee Mine, Shaft, Saginaw Seam.
PO—Saginaw, Mich. SP—Same. CTY Saginaw. RR—P.M., M.C.
MS—T. Westwood, .. Saginaw, Mich.
S of H—elec. loco.
S of M—7 Jeffrey short wall machs.
PP—elec.
EMP—240.

Wolverine No. 2 Mine, Shaft, Saginaw, Seam.
PO—Bay City, Mich. SP—Same. CTY—Saginaw. RR—P. M., M. C.
MS—A. McIllaney, .. Bay City, Mich.
S of H—elec. loco.
S of M—15 Goodman low vein chain machines.
PP—elec.
EMP—180.

Wolverine No. 3 Mine, Shaft, Saginaw Seam.
PO—Bay City, Mich. SP—Same. CTY—Bay. RR—P. M., M. C.
MS—W. F. Williams, Bay City, Mich.
S of H—Elec. loco.
S of M—15 comp. air punching mach.
EMP—370.

C. & F. No. 2 and Riverside No. 2 Mines, Shaft, Saginaw Seam.
PO—Saginaw, Mich SP—Same. CTY—Saginaw. RR—P. M., M. C.
MS—T. Hollis.....Saginaw, Mich.
S of H—Elec. loco.
S of M—2 Jeffrey short wall mach.

DETROIT VITRIFIED BRICK CO.
Shaft Mine, Seam 1½ to 3½ ft. thick.
PO—Corunna, Mich. SP—Same. CTY—Shiawassee. RR—Grand Trunk.
PR—Frank Schmidt, .. Detroit, Mich
GM—Frank Schmidt, " "
TR—Frank Schmidt, " "
GS—W. J. Beaubien, ..Corunna, "
EM—W. J. Beaubien, " "
MS—Herbert Larragin, " "
MM—Chas Drain, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand and comp. air machs.
PP—1 Nagle, 1 Houston, Stamwood & Gamble return tubular boilers, total 250 H. P., 3 engines, 1 air comp., 2 pumps.

Last fiscal year output 1,800 tons. Production used in manufacturing brick. Sales agent, R. M. Adams.

GAGE, ROBERT, COAL CO.
Nos. 2, 3, 5, 6 and 7 Mines, Shaft.
PO—Bay City, Mich. SP—St. Charles and Coryell, Mich. CTY—Saginaw.
PR—Robert Gage, ... Bay City, Mich.
TR—F. W. Urch, " "
SECY—F. T. Woodworth, " "
GM—Chas. Coryell, " "
PA—Wm. Reed, " "
MS—John Coryell, " "
EM—Wm. Evans, ...St. Charles, "
S of H—Elec. loco, mules and rope.
S of M—elec. and comp. air mach. and hand.
PP—40 boilers, total 6,000 H. P. Daily output 4,000 tons.

HANDY BROS. MINING COMPANY.
General Office, Bay City, Mich.

Akron Mine, No. 2 Shaft.
PO—Akron, Mich. CTY—Tuscola. RR—Detroit, Bay City & Western.
GM—Chas. W. Handy....Bay City, Mich.
MS—Dan Morris.....Akron, Mich.
S of H—elec. loco.
S of M—Hand and elec. machines.

JENKINS, T. M.
Cedar River Mine, Shaft, Seam 3 ft. thick.
PO—Williamston, Mich. SP—Same. CTY—Ingham. RR—Pere Marquette.
GM—T. M. Jenkins, Williamston, Mich.
PA—T. M. Jenkins, " "
S of H—Mules. Track gauge 27 in.
S of M—Hand.
PP—One pump, boiler 60 H. P.
EMP—12. Last fiscal year output 2,250 tons.
Mine nearly worked out. Will run about 2 months longer.

MICHIGAN VITRIFIED BRICK CO.
Valley Mine, Drift.
PO—Bay City, Mich.; SP—Same; CTY—Bay; RR—Mich., Central.
PR—Charles Stiver.....Saginaw, Mich.
PA—Fred L. Twining, " "
GM—Fred. L. Twining, " "
EE—Joe Watton.....Bay City, Mich.
MS—Joe Watton, " "
S of H—Mules.
S of M—Comp. air mach.
PP—2 Boilers, total 250 H. P., 1 compressor and 1 pump.
EMP—30. Coke ovens, 2 Bee Hive, 4 Rectangular. Consume coal in brick plant.

NOUD-KEAN COAL MINING CO.
Out of business.

SAVAGE COAL CO.
General Office, Saginaw, Mich.
Verne Mine, Shaft, Seam 3 to 3½ ft. thick.
PO—Burt, Mich. SP—Same. CTY — Saginaw. RR—G. T.
PR—Kent Hess, ... Saginaw, Mich.
TR—R. B. Randall, " "
GM—Ed. Savage, " "
EM—Wm. Shoskey, ... Burt, "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, total 60 H.P., 1 gen. unit, 1 pump.
EMP—5. Last fiscal year output 1,800 tons.

WHAT CHEER COAL MINING CO.
PR—E. B. Foss,....Bay City, Mich.
TR—E. B. Foss, "
GM—E. B. Foss, " "
GS—A. Jeffrey, ... Flint, "
PA—A. N. Faucher, .. Bay City, "
EM—Geo. MacPhail, " "
EE—Wm. Brunner....Bay City, Mich.
Sales agent, A. N. Faucher, " "

What Cheer No. 1 Mine, Shaft, Seam 30 in. to 4 ft. thick.
PO—Munger, Mich. SP—So. Bay City, Mich. CTY—Bay. RR—P. M.
MS—Alex. Jeffrey, ... Flint, Mich.
SM—Geo. E. Hunt, ... Munger, "
S of H—Mules and 3 Morgan Gardner elec. locos. Track gauge 40 in.
S of M—Hand and 13 elec. machs.
PP—5 return tubular boilers, total 500 H.P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—200. Last fiscal year output 100,000 tons.

What Cheer No. 2 Mine, Shaft, Seam 30 in. to 4 ft. thick.
PO—Flint, Mich. SP—Same. CTY—Genessee. RR—Grand Trunk.
MS—A. Jeffrey, ... Flint, Mich.
SM—Wm. Follis.....Flint, Mich.
S of H—Mules. Track gauge 40 in.
S of M—Elec. machines.
PP—3 return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D.C., 5 pumps.
EMP—75. This mine just being opened.

MISSOURI

For List of Abbreviations See Page 498.

ADAIR BRICK, COAL MNG & CONS. CO.
Leased to Big Creek Coal Co.

ANACONDA COAL CO.
Anaconda Mine; Shaft; Bituminous Seam, 30 to 36 in. thick.
PO—Clinton, Mo.; SP—Deepwater, Mo.; CTY—Henry; RR— Frisco C & Springfield Br.
GM—H. T. Demaree.....Clinton, Mo.
PA—H. T. Demaree, " "
S of H—Mules; track gauge 32 in.
S of M—Hand.

ARCTIC COAL & MINING CO.
Shaft, Seam 3 ft. thick.
PO—Novinger, Mo. SP—Same. CTY—Adair. RR—Q. O. & K. C.
PR—Tony Rondretto, .. Novinger, Mo.
TR—Barney Brosighina, " "
PA—Elmer Sinex, " "
MS—Elmer Sinex, " "
EM—Robert Bell, " "
S of H—Mules.. Track gauge 28 in
S of M—Hand.
PP—1 boiler, total 80 H. P., 1 pump.
EMP—11. Last fiscal year output 9,460 tons.

ATLAS COAL MNG. & MERC. CO. (THE)
Out of business.

AUDRAIN COAL CO.
Out of business.

BATES COAL MINING & MERC. CO.
PO—Rich Hill, Mo., CTY—Bates; RR—Mo. Pac.
PR—G. I. Lynch.....Butler, Mo.
VP—S. W. Barr.....Butler, Mo.
PA—S. W. Barr, " "
TR—Homer Humphrey....Rich Hill, Mo.
MS—Z. Bellier, " "

BEALL, W. T.
Shaft Mine; Seam 57 in. thick.
PO—Prairie Hill, Mo.; CTY—Chariton.
PR—W. T. Beall....Prairie Hill, Mo.
GM—L. W. Fawks, " " "
PA—L. W. Fawks, " " "
MS—L. W. Fawks, " " "
S of M—Hand.
PP—1 Water tube boiler, 1 engine and 1 pump. Power purchased.
Last fiscal year output, 2,000 tons.

BELL & GREER.
Drift Mine, Top Seam, 20 in. thick.
PO—Lexington, Mo.; SP—Same; CTY—Lafayette, RR—Mo. Pacific.
GM—J. J. Greer.....Lexington, Mo.
PA—J. J. Greer, " "
GS—Wm Maynard, " "
SCO—Gillen Store.
S of H—Mules; track gauge 17 in.
S of M—Hand.
PP—1 Pump.
EMP—30-40. Last fiscal year output 5950 tons.

BIG CREEK COAL CO.
No. 1 Mine; Shaft; Bevier Seam, 42 in. thick.
PO—Kirksville, Mo.; SP—Same; CTY—Adair; RR—Wab., Q. O. & K. C.
PR—J. C. Ward.....Kirksville, Mo.
GM—J. C. Ward, " "
GS—J. C. Ward, " "
CE—J. C. Ward, " "
TR—J. R. Brown, " "
PA—J. R. Brown, " "
SM—J. R. Brown, " "
MS—A. Steen, " "
S of H—Steam loco. and mules; track gauge, 36 in.
S of M—Hand.
PP—Boiler, 100 H. P., will install 2 gen. unit, 220 volts A. C., 3 phase, 60 cycles.
New operation
Successors to the Kirksville Mercantile Mining & Fuel Co., and leased the mine of the Adair Brick Coal Mining & Cons. Co.

BLACKBIRD CREEK COAL CO.
Blackbird Mine, Slope.
PO—Centerville, Ia. SP—Unionville, Mo. CTY—Appanoose. RR—C. B. & Q., Burlington & Carrolton Br.
GM—C. W. Lane, ... Centerville, Ia.
S of H—Mules and rope. Track gauge 34 in.
S of M—Hand.
Mine closed for two years, may reopen again this season.

BOEDEKER COAL CO.
Boedeker Mine, Slope, Seam 18 in. thick.
PO—Higginsville, Mo. SP—Same. CTY—Lafayette.
GM—Henry Stalb, .. Higginsville, Mo.
S of H—Mules. Track gauge 27 in.
S of M—Hand.

BONANZA COAL CO.
Bonanza Mine, Shaft, Seam 16 to 20 in. thick.
PO—Higginsville, Mo. SP—Same. CTY Lafayette. RR—C. & A
GM—S.W. Brandan, Higginsville, Mo.
PA—S.W. Brandan, " "
MS—W.F. Brandan, " "
S of H—Mules. Track gauge 27 in.
S of M—1 elec. mach.
PP—Volts, 220 A.C. and 250 D.C., 1 phase and 60 cycles, 2 pumps. Purchasa power.
EMP—25. Last fiscal year output 3,008 tons. Sales agent H. Moore, 200 Grant Ave., Kansas City, Mo.

BOWEN COAL CO.
Mines Nos. 2 and 4, Shafts, Seam 5½ to 6 ft. thick.
PO—Windsor, Mo. SP — Bowen, Mo. CTY—Henry. RR—C.R.I.&P.
PR—Richard Bowen, ... Clinton, Mo.
TR—W. S. Bowen, ... Windsor, "
GM—John Bowen, " "
PA—John Bowen, " "
MS—Thos. R. Bowen, " "
MM—E. C. Easley, " "
S of H—Mules. Track gauge 32 in.
S of M—Hand.
PP—4 return tubular boilers, total 300 H.P., 5 pumps.
EMP—295. Last fiscal year output 140,000 tons. Sales agent, Star Coal Co., Kansas City, Mo.

BRADLEY COAL CO.
Bradley Mine, Shaft, Seam 4 ft. to 4 ft. 11 in. thick.
PO—Huntsville, Mo. SP—Moberly. CTY—Randolph. RR—Wabash and M. K. & T.
PR—D. L. Bradley, .. Huntsville, Mo.
GM—D. L. Bradley, " "
MS—D. L. Bradley, " "
EM—D. L. Bradley, " "
S of H—Mules. Track gauge 28 in.
S of M—Hand.
Last fiscal year output 2,680 tons.

BUCKLIN COAL CO.
Shaft Mine, Teha Seam, 32 in thick.
PO—Bucklin, Mo. SP—Same. CTY—Linn. RR—Santa Fe.
GM—O. B. Cantwell, .. Bucklin, Mo.
PA—O. B. Cantwell, " "
TR—G. H. Waldruff, " "
S of H—Elec. loco. and mules. Track gauge 34 in.
S of M—1 elec. mach.
PP—Return tubular boiler, 75 H.P., 1 gen. unit 220 volts D.C.
EMP—28.

BUNKER HILL COAL CO.
No. 2 Mine; Shaft; Seam 28 in. thick.
PO—Brookfield, Mo.; SP—Same; CTY—Linn; RR—C. B. & Q.
PR—M. E. Drake.....Brookfield, Mo.
TR—R. Drake, " "
MS—R. Drake, " "
GM—Z. J. Banning, " "
PA—Z. J. Banning, " "
GS—W. M. Walker, " "
S of H—Mules; track gauge, 26 in.
S of M—Hand.
PP—1 Boiler.
EMP—12.

CALDWELL COAL CO.
Shaft Mine.
PO—Hamilton, Mo. SP—Same. CTY—Caldwell. RR—C. B.& Q.
GM—H. W. Gilbert....Hamilton, Mo.
PA—H. W. Gilbert, " "
S of H—Mules.
S of M—Hand.
PP—Boiler, 50 H. P.
EMP—25.

CARR COAL & MERC. CO.
Carr Mine.
PO—Rich Hill, Mo. SP—Same. CTY—Bates. No report.

CENTRAL COAL & COKE CO.
General Office, Kansas City, Mo.
Three Mines in Missouri, 3 in Wyoming, 2 in Oklahoma, 7 in Arkansas, 9 in Kansas.
Nos. 24, 25 and 28 Mines, Slope and Shaft, Des Moines Seam.
PO—Bevier, Mo. SP—Same. CTY—Macon. RR—Mo. & La., Burlington.
PR—Charles S. Keith, Kansas City, Mo.
VP—Harry N. Taylor.....Chicago, Ill.
PA—Thos. Mackle, " "
GM—Thos. Mackle, " "
MS—A. W. Dickinson.....Bevier, Mo.
S of H—Mules.
S of M—Hand.
PP—10 boilers.
EMP—923.

CLARK COAL CO.
Shaft Mine.
PO—Perry, Mo.; SP—Same; CTY—Ralls; RR—St. L. & H.
PR—D. B. Fitzpatrick.....Perry, Mo.
GM—D. B. Fitzpatrick, " "
TR—J. W. Fitzpatrick, " "
MS—John Ledford.
S of H—Mules.

COLUMBIA COAL & MINING CO.
Switzler Mine, Shaft, Seam 3½ to 4½ ft. thick.
PO—Columbia, Mo. SP—Switzler, Mo. CTY—Boone. RR—Wabash.
GM—E. O. Hutsell, .. Columbia, Mo.
PA—E. O. Hutsell, " "
MS—E. O. Hutsell, " "
MM—James Miles, " "
S of H—Mules.
EMP—20.
Note—Mine shut down since April, 1914.

CONNELSVILLE COAL & MINING CO.
Mine No. 1 Slope, Top Seam, 40 to 44 in.
PO—Connelsville, Mo. SP—Same. CTY Adair. RR—Iowa & St. Louis.
PR—G. W. Evans, .. Connelsville, Mo.
GM—G. W. Evans, " "
MS—G. W. Evans, " "
MM—A. Lanner, " "
TR—S. F. Shoop, " "
S of H—Mules. Track gauge 29½ in.
S of M—Hand.
PP—2 Wagner boilers, total, 50 H. P., 1 pump.
EMP—110. Last fiscal year output 62,130 tons. Sales agent, G. W. Evans, Connelsville, Mo.

CORDER COAL CO.
Corder Mine, Shaft.
PO—Corder, Mo. SP—Same. CTY—Lafayette. RR—C. & A.
GM—Paul Young, ... Corder, Mo.
MS—Thomas Price, " "
S of H—Gravity.
S of M—Hand.
EMP—20.

CRAWFORD, WILSON COAL CO.
Shaft Mine.
PO—Richmond, Mo. SP—Same. CTY—Ray. RR—A. T. & S. F.
S of H—Mules.
S of M—Hand.
EMP—75. State report.

CRESCENT COAL CO.
Crescent Mine, Shaft, Seam 3 ft. thick.
PO—Brownington, Mo. SP—Same. CTY—Henry. RR—Frisco, Blanchard's Switch Branch.
PR—John Reece, .. Brownington, Mo.
TR—Jas. McAfoole, " "
GM—W. D. Reece, " "
MS—W. D. Reece, " "
S of H—Mules and 2 gasoline locos. Track gauge 36 in.
S of M—Hand.
PP—2 boilers, 2 pumps.
EMP—25. Last fiscal year output 10,850 tons.

CRESCENT COAL CO.
Crescent Mine; Shaft; 3rd or Mulky Seam, 42 to 48 in thick.
PO—Yates, Mo.; SP—Same; CTY—Randolph; RR—C. & A.
PR—Mike Bottino.....Yates, Mo.
GM—Mike Bottino, " "
TR—Chas. Bottino, " "
GS—Henry Welch, " "
PA—Henry Welch, " "
MS—Pete Bottino, " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler (Elliston).
EMP—6. Last fiscal year output, 1,100 tons.

CRISPIN-WARD.
Black Diamond Mine, Shaft, Seam 2 ft. thick.
PO—Richmond, Mo. CTY—Ray. RR—A. T. & S. F., St. Joseph Br.
GM—W. O. Ward, ... Richmond, Mo.
MS—W. O. Ward, " "
PA—W. O. Ward, " "
S of H—Mules. Track gauge 2 ft.
S of M—Hand.
EMP—15. Last fiscal year output 2,153 tons.

DAME & SON.
Stripping, Seam, 2 to 4 ft. thick.
PO—Rich Hill, Mo.; R. F. D. No. 1,; SP—Same; CTY— Bates; RR— Mo. P.
MS—F. Dame, ...,, Rich Hill, Mo.
Closed down.

DAVID, JOHN, COAL CO.
Out of business.

DAVIS CREEK COAL CO.
Nos. 3 and 4 Mines; Shaft; Seam 42 in. thcik.
PO—Novinger, Mo.; SP—Same; CTY—Adair; RR—C. B. & Q., Q. O. and K. C.
PR—R. E. Rombauer, St. Louis, Mo.
TR—L. L. Brandt, ...Chicago, Ill.
GM—J. L. Rowland....Novinger, Mo.
PA—J. L. Rowland, " "
GS—John Barron, " "
MS—John Barron, " "
EM—T. W. Blake, " "
EE—Robt. Scott, " "
S of H—1 Elec. loco.; track gauge 30 in.
S of M—9 Elec. mach.
PP—5 Return tubular boilers, total 375 H.P.; 1 gen. unit 250 volts D.C.
EMP—400. Output 152,696.24 tons. Sales Agents, Midland Coal Co., Kansas City, Mo.
Successors to the Rombauer Coal Co.

DIAMOND COAL CO.
Wilson Mine, Shaft; Seam 18 to 24 in. thick.
PO—Corder, Mo. SP—Same. CTY—Lafayette. RR—C. & A.
PR—G. A. Fierking, ... Corder, Mo.
TR—Wm. M. Groves, " "
GM—K. P. Kramer, " "
PA—K. P. Kramer, " "
MS—K. P. Kramer, " "
S of H—Mules. Track gauge 27 in.
S of M—Hand.
PP—2 boilers, total 75 H. P., 2 pumps.
EMP—125. Last fiscal year output 17,726 tons. Sales agent K. T. Kramer, Corder, Mo.

DICKEY, W. S., CLAY MFG. CO.
Out of business.

DOOLEY, J. A.
Little Ridge Mine, Drift.
PO—Keytesville, Mo.; CTY—Charlton, RR—Wabash.
GM—J. A. Dooley, .. Keytesville, Mo.
S of H—Mules.
S of M—Hand.
EMP—5.

DOVER COAL CO.
Dover Mine; Drift; Lexington Seam, 16 to 29 in. thick.
PO—Lexington, Mo.; SP—Dover Station, Mo.; CTY—Lafayette; RR—Mo. Pac.
PR—Tilton Davis.....Lexington, Mo.
TR—Tilton Davis, " "
GM—Tilton Davis, " "
PA—Tilton Davis, " "
SM—Tilton Davis, " "
MS—John A. Davis, " "
S of H—Mules and gravity; track gauge, 18 in. thick.
S of H—Hand.
EMP—20. Last fiscal year output, 5,000 tons.

EAGLE COAL CO.
Shaft Mine; Seam 28 in. thick.
PO—Vandalia, Mo.; SP—Same; CTY—Audrian; RR—C. & A.
PR—F. Morris.....Vandalia, Mo.
TR—W. H. Haas, " "
SECY—W. J. Hughes, " "
MS—Robert Trumbull, " "
S of M—Hand.
EMP—15. Last fiscal year output, 1,365 tons.

EUREKA COAL, MINING & MERC. CO.
Shaft, Seam 3½ to 5 ft. thick.
PO—Rich Hill, Mo. SP—Panama, Mo. CTY—Bates. RR—M. P., K. C. to Joplin.
PR—G. H. Davis, .. Kansas City, Mo.
TR—F. A. Griffin, ... Rich Hill, "
SECY—F. A. Griffin, " "
PA—F. A. Griffin, " "
SM—F. A. Griffin, " "
MS—John S. Davis, "
S of H—Mules.
PP—2 boilers, total 100 H. P. New mine.

FARMERS FUEL CO.
General Office, Rialto Bldg., Kansas City, Mo.
PR—F. W. Lukins..Kansas City, Mo.
GM—F. W. Lukins, " "
TR—W. C. Duval, " "
GS—N. R. Andrews, Higginsville, Mo.

Longwall Mine; Shaft and Drift; Seam, 15 to 18 in. thick.
PO—Higginsville, Mo.; SP—Same; CTY—Lafayette; RR—C. & A., Mo. Pac.
S of H—2 Elec. loco.
S of M—18 Elec. mach.
PP—1 Water tube, 5 return tubular boilers, total 800 H. P., 8 pumps.
EMP—200. Last fiscal year output, 38,160 tons.

Nos. 1 and 6 Mines; Shaft; Seam, 15 to 20 in. thick.
PO—Higginsville, Mo.; SP—Same; CTY—Lafayette; RR—C. & A., Higginsville Switch Br.
S of H—2 Elec. loco.
S of M—8 Elec. mach.
PP—1 Water tube, 2 return tubular boilers, total 450 H. P., 3 pumps.
Last fiscal year output, 10,979 tons.

No. 3 Mine; Seam 15 to 20 in. thick.
PO—Higginsville, Mo.; SP—Same; CTY—Lafayette; RR—C. & A., Mo. Pac., Higginsville Br.
Idle at present.

No. 7 Mine; Drift, Seam, 15 to 20 in. thick.
PO—Higginsville, Mo.; SP—Same; CTY—Lafayette; RR—C. & A., Mo. Pac. Higginsville Br.
S of M—10 Elec. mach.
PP—Power from No. 1 Mine, 1 return tubular boiler, 1 pump.
Last fiscal year output, 35,224 tons.
Successors to the Farmers Coal Co.

FRANKENFIELD COAL MINING CO.
GM—A. Frankenfeld, ..Rich Hill, Mo.
PA—A. Frankenfeld, " "
EM—J.W. Frankenfeld, Rich Hill, Mo.
Sales agency, Burnett, Arnold Coal Co., Pittsburg, Kan.

Mine No. 3, Slope, Seam, 3 to 4 ft. thick.
PO—Rich Hill, Mo. SP—Foster, Mo. CTY—Bates. RR—Mo. Pac., Madison Branch.
MS—A. Frankenfield, .. Rich Hill, Mc
S of H—Mules and rope. Track gauge 35 in.
S of M—Hand.
Last fiscal year output 5,000 tons.

Black Duck No. 10 Mine, Stripping, Seam, 3 to 4 ft. thick.
PO—Rich Hill, Mo. SP—Foster, Mo. CTY—Bates. RR—Mo. Pac., Madison Branch.
MS—S. R. Frankenfield, Rich Hill, Mo.
S of M—Hand.
Last fiscal year output 4,000 tons.

FRERE-MEREDITH COAL CO.
Out of business.

FOWLER COAL & MINING CO.
Shaft Mine.
PO—Richmond, Mo. CTY—Ray. RR—A. T. & S. F.
S of H—Rope and mules.
S of M—Hand.
EMP—100. State report.

FOX, W. H.
Slope Mine; Seam, 48 in. thick.
PO—Appleton City, Mo.; SP—Same;CTY—Bates; RR—M. K. T.
GM—W. H. Fox....Appleton City, Mo.
S of H—Gasoline loco.
S of M—Hand.
PP—Boiler, 10 H. P.
EMP—8. Last fiscal year output, 1,000 tons.

FULTON FIRE BRICK COMPANY.
Larimore Mine, Shaft, Bevier Seam, 2½ to 3½ ft thick.
PO—Fulton, Mo. SP—Same. CTY—Callaway. RR—C. & A.
PR—A. C. Stewart, ... St. Louis, Mo.
TR—D. C. McCue, ... Fulton, "
PA—T. B. Jones.....Fulton, Mo.
MS—H. E. Harris, " "
S of H—Mules. Track gauge 26 in.
S of M—Hand.
PP—1 Atlas return tubular boiler, total 125 H. P., 1 gen. unit, 1 pump.
EMP—50. Last fiscal year output 18,000 tons.

GARRISON, J L
Stripping Mine, Seam 5 ft. 8 in. to 6 ft. 7 in. thick.
PO—Rich Hill, Mo. SP—Same. CTY—Bates. RR—Mo. Pacific.
GM—John L. Garrison, Rich Hill, Mo.

GRAND RIVER COAL & COKE CO.
Cainsville No. 1 Mine; Shaft; Cainsville Seam, 36 to 72 in. thick.
PO—Cainsville, Mo. SP—Same. CTY—Harrison. RR—C. B. & Q.
PR—C. H. Alderfer....Norristown, Pa.
VP—James Brann ...Bartlesville, Okla.
GM—Phil. H. Waterman.....Albia, Ia.
TR—R. C. Payne.....Cainsville, Mo.
GS—J. W. Smith, " "
PA—J. W. Smith, " "
EM—DeWitt Green, " "
S of H—Mules and 2 elec. and 1 storage battery locomotives, track gauge 42 in.
S of M—Hand.
PP—4 Atlas and 2 Coatesville return tubular boilers, total 900 H. P., 1 gen. unit, 250 volts, D.C., 1 compressor, 1 pump.
EMP—300. Last fiscal year output 149,108.4 tons. Sales agent, Coal Hill Coal Co., Omaha, Neb.

HAYNES COAL & MINING COMPANY.
No. 1 Colico, Stripping, Cherokee Seam, 32 in. thick.
PO—Ardath, Mo. SP—Same. CTY—Barton. RR—Frisco and Kans. City Sou.
GM—Wm. W. Haynes, . Arcadia, Kan.
MS—Jno. Haynes, ... Ardath, Mo.
EM—Jno. Haynes, " "
PA—Thos. Haynes, " "
SM—Thos. Haynes, " "
MM—Henry Arnold, " "
EE—Henry Arnold, " "
S of H—Rope, mules and steam locos. Track gauge 36 in.
PP—4 return tubular boilers. Sales agent, Wm. W. Haynes, Arcadia, Kan.

HECKMORE MINING CO
Shaft Mine.
PO—Rich Hill, Mo. SP—Same. CTY—Bates. RR—Mo. Pacific.
S of H—Rope and mules.
S of M—Hand.
EMP—40. State report.

HIGBEE BLOCK COAL CO.
See The Walton Coal Co., Higbee, Mo.

HOLLAND COAL CO.
Holland Mine.
PO—Rich Hill, Mo. CTY—Bates. No report.

HOME COAL CO.
Home Mine, Shaft, Mulkey Seam 18 to 28 in. thick.
PO—Macon, Mo. SP—Same. CTY—Macon, RR—C. B. & Q.
PR—M. T. Rombauer.....Macon, Mo.
TR—H. J. Whetsel, " "
PA—H. J. Whetsel, " "
EE—H. J. Whetsel, " "
GM—M. I. Rombauer, " "
MS—L. F. Bennight, " "
S of H—Mules. Track gauge 18 in.
S of M—2 elec. machines.
PP—1 return tubular boiler, total 60 H. P., 1 pump Also power purchased.
EMP—100. Last fiscal year output 22,400 tons.
Sales agent, M. T. Rombauer, Macon, Mo.

HOWARD COUNTY COAL CO.
General Office, Fayette, Mo.
Russell Mine, Slope, Higbee Seam 3½ ft. thick
PO—Higbee, Mo. SP—Russell. CTY—Randolph. RR—M. K. T.
PR—J. W. Watts, ... Fayette, Mo.
MS—John Mine.....Higbee, Mo.
EM—J. W. Henderson,
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 pump.
EMP—40. Last fiscal year output 10,000 tons.

HURST COAL CO.
Casper Creek, Shaft, Seam 3 ft. thick.
PO—Deepwater, Mo. SP—Same. CTY—Henry. RR—K. C. C. & S.
PR—J. W. Hurst.....Deepwater, Mo.
TR—J. W. Hurst, " "
PA—J. W. Hurst, " "
MS—C. R. Brownington, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand.
EMP—20. Last fiscal year output 5,815 tons.

IDEAL COAL & MINING CO.
Ideal Mine; Stripping Seam, 30 to 54 in. thick.
PO—Hume, Mo.; SP—Same; CTY—Baton; RR—Frisco.
PR—Abe Billings, ...Hume, Mo.
TR—A. L. Billings, " "
GM—A. L. Billings, " "
GS—A. L. Billings, " "
PA—A. L. Billings, " "
MS—W. French, " "
MM—W. French, " "
EM—Chas. Williams, " "
CE—Elmer Whited, " "
S of H—Mules and rope.
S of M—Hand.
PP—3 Engines.
EMP—28. Output 100 to 150 tons a day.
Sales Agency, Barnett & Son.

INDEPENDENCE COAL & MINING CO.
PO—Independence, Mo. CTY—Jackson
No report.

JACKSON & JOHNSON.
Shaft, 4 ft. 3 in. to 4 ft. 8 in. thick.
PO—Clifton Hill, Mo. CTY—Randolph.
GM—G. H. Jackson, . Clifton Hill, Mo.
MS—G. H. Jackson, Clifton Hill, Mo.
S of M—Hand.
EMP—6. Last fiscal year output 2,000 tons.

JONES COAL CO.
James Mines, Slope; Rick Hill Seam, 48 to 84 in. thick.
PO—Rich Hill, Mo.; SP—Same, CTY—Bates, RR—Mo. Pac.
PR—J. Elmer Jones, .. Rich Hill, Mo.
GM—J. Elmer Jones, " "
PA—J. Elmer Jones, " "
TR—W. W. Jamison, " "
MS—S. R. Campbell, " "
MM—W. H. Lynn, " "
S of H—Mules Track gauge 3 t.
S of M—Hand.
PP—2 Boilers, 2 pumps.
EMP—25. Last fiscal year output 20,000 tons.

KANSAS CITY MIDLAND COAL & MINING COMPANY.
General Office, 733 Reserve Bank Bldg., Kansas City, Mo.
Midland No. 4 Mine, Shaft. Novinger Seam 37 to 46 in. thick.
PO—Novinger, Mo.; SP—Youngstown, Mo. CTY—Adair, RR—Q. I. & St. L.
PR—E. J. Corrigan, Kansas City, Mo.
TR—E. J. Corrigan, " "
GM—H. G. Kellogg, " "
PA—J. J. Ward, ... Novinger, "
MS—J. J. Ward, " "
MM—J. J. Ward, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—2 Boilers, total 300 H. P.
EMP—185. Out put, 750 tons per day.
Sales agent W. P. Bross, Kansas City, Mo.

LABOR EXCHANGE COAL & MNG. ASSN. BRANCH NO. 305.
Exchange No. 305 Mine, Shaft, Seam 16 to 20 in. thick.
PO—Wellington, Mo. SP—Same. CTY—Lafayette. RR—Mo. Pacific, Sedalia Branch.
PR—John McCrindle, .. Wellington, Mo.
GM—A. J. Blair.....Wellington, Mo.
PA—A. J. Blair, " "
MF—H. Kendrick, " "
MS—C. F. Reitchert....Wellington, Mo.
EE—R. G. Burge, " "
MM—John Newig, ... Napoleon, "
S of H—Mules. Track gauge 16½ in.
S of M—4 elec. mach.
PP—2 return tubular boilers, total 205 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—75. Last fiscal year output 27,055 tons. Sales agent, J. P. Crutsinger, Wellington, Mo.

LANING-HARRIS COAL & GRAIN CO.
General Office, Kansas City, Mo.
Daisy Mine, Drift, Seam 18 in. thick.
PO—Wellington, Mo. SP—Same. CTY—Lafayette. RR—Mo. Pacific, Lexington Branch.
PR—C. B. Laning, .. Kansas City, Mo.
TR—H. Harris, " "
GM—H. Harris, " "
PA—H. Harris, " "
MS—Geo. Anderson....Lewis Sta., Mo.
MM—C. F. Reitchert, " "
EE—C. F. Reitchert, " "
S of H—4 elec. locos. Track gauge 18 in.
S of M—8 elec. machines.
PP—2 Atlas return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts. D. C., 3 pumps.
EMP—125. Last fiscal year output 30,000 tons. Sales agent, H. Harris.

LAWDER & PETERSON.
Farber Mine, Shaft.
PO—Farber, Mo. SP—Same. CTY—Audrain. RR—C. & A.
GM—G. H. Pearce, ... Farber, Mo.
PA—G. H. Pearce, " "
EM—G. H. Pearce, " "
SM—G. H. Pearce, " "
MS—C. E. Tucker, " "
S of H—Mules and rope.
S of M—Hand.
PP—2 boilers, total 200 H. P., 1 gen. unit, 250 volts D. C.

LEWIS COAL COMPANY.
Pigg Mine, Shaft and Drift, "Tebo", Seam, 30 to 36 in. thick.
PO—Calhoun, Mo. SP—Lewis Sta., Mo. CTY—Henry. RR—M. K. & T.
TR—D. B. Pigg, ... Calhoun, Mo.
GM—D. B. Pigg, " "
PA—D. B. Pigg, " "
MS—George Anderson, Lewis Sta., Mo.
S of H—Mules. Track gauge 36 in.
S of M—Hand and 2 comp. air mach.
PP—Return tubular boiler, 1 gen. unit, 1 compressor, 2 pumps.
EMP—25. Last fiscal year output 9,000 tons.

LIBERAL COAL & MINING CO.
No. 1 Mine; Stripping; Seam 24 to 36 in. thick.
PO—Liberal, Mo.; SP—Same; CTY—Barton.
PR—J. H. Vincent, ...Liberal, Mo.
CM—J. H. Vincent, " "
PA—J. H. Vincent, " "
EM—J. H. Vincent " "
TR—H. B. Gilbert, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Boilers, total 250 H.P.
EMP—25. Output from October 20, 1914, 9,000 tons.

LINN COUNTY COAL MINING & LAND CO.
Shaft Mine; Marceline Seam, 24 to 30 in. thick.
PO—Brookfield, Mo.; SP—Same, CTY—Linn; RR—Burlington.
PR—Albert Tamm, ..Kansas City, Mo.
TR—Wm. H. Ashley, " "
GM—J. J. Rafferty, ..Brookfield, Mo.
MS—J. J. Rafferty, "
S of H—Mules; track gauge 26 in.
S of M—1 Elec. mach.
PP—1 Pump; power purchased.
EMP—13 to 30. Output 40 tons daily.

McGREW COAL CO.
PR—E. J. McGrew, ... Lexington, Mo.
TR—J. C. McGrew.....Lexington, Mo.
SM—J. C. McGrew, " "
GM—E. J. McGrew, " "
PA—E. J. McGrew, " "
GS—Thos. Wedge, " "
EM—Thos. Wedge, " "
CE—J. W. Bills, " "
MM—J. W. Bills, " "

McGrew No. 1 Mine, Drift, Bituminous Seam 22 in. thick.
PO—Lexington, Mo. SP—Myrick, Mo. CTY—Lafayette. RR—Mo. Pacific.
MS—Jack Bell.....Lexington, Mo.
S of H—5 Elec. loco.; track gauge 29 in.
S of M—6 elec. machines.
PP—3 Jno. O'Brien return tubular boilers, 2 gen. units, 250 volts D. C., 1 pump.
EMP—195. Last fiscal year output 48,200 tons.

McGrew's "Graddy" Mine, Drift, Bituminous Seam.
PO—Lexington, Mo. SP—Myrick, Mo. CTY—Lafayette. RR—Mo. Pacific.
MS—L. W. Goffin.....Lexington, Mo.
S of H—Mules. Track gauge 29 in.
S of M—8 elec. machines.
PP—2 pumps. Power from No. 1 mine.
EMP—203. Last fiscal year output 54,400 tons.

MACEY COAL MINES.
Joseph Perry & Son, Lessees.
Macey Mine, Drift, Seam 22 in. thick.
PO—Lexington, Mo. SP—Myrick Sta. CTY—Lafayette. RR—Missouri Pac.
MS—Jos. Perry, ... Lexington, Mo.
S of H—Mules.
S of M—Hand.

MANUFACTURERS COAL & COKE CO.
See Connelsville Coal & Mining Co.,

MAPLE HILL COAL CO.
Out of business.

MARCELINE COAL & MINING CO.
General Office, Wichita, Kan.
Mines Nos. 1 and 2, Shaft, Seam 27 to 42 in. thick.
PO—Marceline, Mo. SP—Same. CTY—Linn. RR—A. T. & S. F.
PR—G. T. Walker.....Wichita, Kan.
TR—G. T. Walker, ...Wichita, Kan.
VP—C. A. Clouch.....Wichita, Kan.
Secy—J. A. Parkinoon, " "
MS—J. Hemmings.....Marceline, Mo.
Asst. Supt—Geo. Colville..Marceline, Mo.
MM—A. Thomas. " "
SCO—Marceline Mercantile & Supply Co. Buyer, J. Hemmings. Marceline, Mo.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—3 return tubular boilers, total 200 H. P., 2 pumps.
EMP—301. Last fiscal year output 90,718 tons. Sales agent, J. Hemmings.

MARTIN, HUBBELL, OSBORNE COAL CO.
Nos. 7, 10, 2 and 33 Mines.
PO—Richmond, Mo. CTY—Ray. No report.

MARTINSBURG COAL & MINING CO.
Martinsburg Mine, Shaft, Seam 24 to 36 in. thick.
PO—Martinsburg, Mo. CTY—Audrain. RR—Wabash.
Continued on Next Page.

PR—A. Matthews, .. Martinsburg, Mo.
TR—R. W. Moser, " "
GM—Wm. P. Moser, " "
EM—Wm. P. Moser, " "
PA—Chas. E. Moser, " "
MS—J. F. Moser, " "
S of H—Mules.
S of M—Hand.
PP—Gen. unit.
EMP—20. Last fiscal year output 6322 tons. Sales agent, Wm. P. Moser.

MENDOTA COAL COMPANY.
Mine No. 2, Shaft, Seam 30 to 36 in. thick.
PO—Mendota, Mo. SP—Same. CTY—Putnam. RR—C. B. & Q., C. B. & K. C.
PR—W. E. Blake.....Burlington, Ia.
TR—E. Ketcham.....Mendota, Mo.
GM—W. D. Ketcham " "
PA—W. D. Ketcham ... " "
MS—F. M. Beamhall, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, 1 pump.
EMP—75. Sales agent, W. D. Ketcham, Mendota, Mo.

MERCANTILE COAL & MINING CO.
Mine No. 17, Shaft, Seam 30 in. thick.
PO—Richmond, Mo. SP—Same. CTY—Ray. RR—A. T. & S. F.
PR—J. W. Atwill, Box 624, Kan. City, Mo.
TR—J. W. Atwill, Box 624, Kan. City, Mo.
GM—F. R. Atwill, ... Richmond, "
PA—F. R. Atwill, " "
MS—Robt. Blair, " "
EM—Robt. Blair, " "
EE—Murray Clivinger .... " "
S of H—Mules. Track gauge 30 in.
S of M—Hand and 2 elec. mach.
PP—2 water tubes, total 100 H. P., 1 gen. unit, D. C., 1 pump. Also buy power.
EMP—140. Last fiscal year output 350 tons per day.

MINDEN COAL CO.
General Office, Joplin, Mo.
Stripping Mines, 28 to 42 in. thick.
PO—Mindenmines, Mo.; CTY—Barton; RR—Mo. Pac.; Pgh. & Nevada Branch.
PR—J. G. Starr.....Joplin, Mo.
TR—Wm. Houk, " "
VP—H. J. Sternberg....Pine Bluff, Ark.
Secy—W. H. Meierstein, Kansas City, Mo.
GM—O. S. Hubert, Mindenmines, Mo.
GS—O. S. Hubert, " "
PA—O. S. Hubert, " "
S of H—1 Steam loco.; track gauge 42 in.
S of M—Hand.
PP—Locomotive type boiler, 240 H.P. 2 pumps.
EMP—25 to 40.

MISSOURI CITY COAL MINING CO.
Missouri Mine, Shaft, Lexington Seam, 22 in. thick.
PO—Missouri City, Mo. SP—Same. CTY—Clay. RR—Wabash.
PR—Geo. C. Gray, ...Kansas City, Mo.
TR—Chas. G. Shaw, Missouri City, Mo.
GM—Chas. G. Shaw, " " "
PA—Chas. G. Shaw .. " " "
MS—Chas. G. Shaw .. " " "
CE—A. Battagler, " " "
SCO—Shaw & Donovan; Buyer L. E. Donovan, Missouri City, Mo.
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—2 boilers, 1 pump.
EMP—65. Last fiscal year output 22,093 tons. Sales Agent, Missouri City Coal Co.

MISSOURI MINING MFG. & MERC. CO.
See the Blackbird Creek Coal Co.

MITCHELL, W. E., COAL & MNG. CO.
Drift, Seam 4 ft. thick.
PO—Huntsville, Mo. SP—Same. CTY Randolph. RR—Wabash.
PR—W. E. Mitchell. ..Huntsville, Mo.
GM—W. E. Mitchell....Huntsville, Mo.
MS—W. E. Mitchell, " "
TR Alfred Lovell.....Huntsville, Mo.
S of H—Mules. Track gauge 31 in.
S of M—Hand.
EMP 4. Last fiscal year output 1761 tons.

NORTHERN CENTRAL COAL CO.
General Office, Higbee, Mo.
PR—I. H. Seaman, 28 Nassau St. New York, N. Y.
GM—H. N. Taylor, Keith & Perry Bldg., Kan. City, Mo.
GS Wm. Harkes .....Moberly, Mo.
CE—Wm. Harkes, " "
EM—D. E. Ingersoll, Huntsville, Mo.
Sales Agent, R. C. Lanke, Moberly, Mo.

No. 2 Mine, Shaft, Seam 38 to 48 in. thick Operate washery.
PO—Huntsville, Mo. SP—Same. CTY—Randolph. RR—Wabash.
MS—Wm. Jones.....Huntsville, Mo.
S of H—3 elec. loco. and mules. Track gauge 28 in.
S of M—Hand.
PP—6 return tubular boilers, total 550 H. P., 2 gen. units, 250 volts D. C., 4 pumps.
EMP—212. Last fiscal year output 110,500 tons.

No. 12 Mine, Shaft, Seam 38 to 48 in. thick. Operate washery.
PO—Huntsville, Mo. SP—Same. CTY—Randolph. RR—Wabash.
MS—John Powell, ... Huntsville, Mo.
S of H—2 Elec. loco., track gauge 36 in.
S of M—Hand.
PP—3 Pumps. Power from No. 2 Mine.
EMP—228. Last fiscal year output 185,400 tons.

No. 11 Mine, Shaft, Seam 40 to 54 in. thick. Operate washery.
PO—Higbee, Mo. SP—Same. CTY—Randoph. RR—C. & A., M. K. & T.
MS—Montgomery Sharp....Higbee, Mo.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—5 return tubular boilers, total 400 H. P., 1 pump.
EMP—217. Last fiscal year output 80,000 tons.

No. 5 Mine, Shaft, Seam 4 to 5 ft. thick.
PO—Elliott, Mo. SP—Same. CTY — Randolph. RR—M. K. & T.
MS—Chas. Moore.....Elliott, Mo.
S of H—1 elec. loco. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—200. Last fiscal year output 70,000 tons.

NORTHWESTERN COAL & MINING CO.
General Office, Bevier, Mo.
PR—J. H. Bovard, .. Kansas City, Mo.
TR—C. G. Thurston, ... Bevier, Mo.
PA—C. G. Thurston, " "
GS—L. Larsen ..... " "
EM—L. Larsen.....Bevier, Mo.
MM—L. Kroscup, ... Bevier, "
SCO—Albert Daniels,.....Bevier, Mo.

Mine No. 8, Shaft, "Bevier" Seam, 2 to 6 ft. thick.
PO—Bevier, Mo. SP—Same. CTY—Macon. RR—Burlington.
MS—Ed. Simpson, ... Bevier, Mo.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—3 boilers, total 300 H. P., 2 pumps.
EMP—450. Capacity 1,000 tons per day.

Mine No. 9, Shaft, "Bevier" Seam, 4 ft. 6 in. thick.
PO—Bevier, Mo. SP—Same. CTY—Macon. RR—Burlington.
S of H—Mules. Track gauge 2½ ft.
S of M—Hand.
PP—3 Boilers, total 300 H. P., 1 pump.
EMP—400. Capacity 900 tons per day.

PARKS COAL CO.
Slope Mine; Seam 40 in. thick.
PO—Calhoun, Mo.; SP—Same; CTY—Henry; RR—M. K. & T.
PR—A. F. Parks, ...Calhoun, Mo.
GM—A. F. Parks, " "
MS—John Cahl, " "
S of H—1 Steam loco. and mules; track gauge 36 in.
S of M—Hand.
PP—1 Pump.
EMP—35. Last fiscal year output 12,000 tons.

PERRY-McMAHAN COAL CO.
General Office, Kansas City, Mo.
Stripping Mine, Rich Hill Seam, 48 to 72 in. thick.
PO—Rich Hill, Mo.; SP—Panama, Mo.; CTY—Bates; RR—Mo. Pac.
PR—W. C. Perry, Kansas City, Mo.
TR—W. C. Perry, " " "
GS E. O McMahan....Rich Hill, Mo.
MS—C. H. Page.....Panama, Mo.
S of H—1 Steam loco.; track gauge 42 in.
S of M—Hand.
PP—3 Return tubular boilers, total 250 H. P. and 2 pumps.
EMP 50. Out put 300 tons per day

PEEHIRRER COAL CO.
Not operating.

PICKERING COAL COMPANY.
Mines Nos. 4, 6, 9, 11, Shafts, "Lexington" and "Richmond" Seams, 24 in. thick.
PO—Richmond, Mo. SP—Same and Camden, Mo. CTY—Ray. RR — Santa Fe and Wabash.
PR—I. Pickering, ... Richmond, Mo.
TR—I. Pickering, " "
GM—I. Pickering, " "
GS—Charles Pickering, " "
PA—Geo. Pickering, " "
EM—Harvey Pickering, " "
MM—Harvey Pickering, " "
SCO—Pickering & Co. Buyer, Geo. Pickering.
S of H—Mules. Tack gauge 30 in.
S of M—Hand.
PP—1 water tube, 3 return tubular boilers, total 200 H. P., 6 pumps. Also purchase power.
EMP—300. Last fiscal year output 166,000 tons. Sales agent, I. Pickering.

PLATTENBURG COAL CO.
Plattenburg Mine, Drift, Seam 18 to 24 in. thick.
PO—Lexington, Mo. CTY—Lafayette. RR—Lexington & Sedalia.
PR—J. L. Plattenburg, Lexington, Mo.
TR—H. C. Wallace, " "
GM—Mat Atwood, " "
MS—Mat Atwood, " "
GS—Geo. M. Vaughan, Lexington, Mo.
S of H—Mules.
S of M—Hand.
EMP—30. Last fiscal year output 6,118 tons.

PSCHIRRER, CHAS., & SONS.
No. 3 Mine; Shaft, Seam, 34 to 36 in. thick.
PO—Sprague, Mo.; SP—Same; CTY—Bates; RR—Frisco.
PR—Chas. Pschirrer.....Sprague, Mo.
PA—Chas. Pschirrer, " "
TR—Anna Pschirrer, " "
GM—John Pschirrer, " "
MS—George Pschirrer, " "
S of H—Mules.
S of M—Hand.
PP—Boiler 30 H. P., 1 pump.
EMP—6. Last fiscal year output 1,500 tons.

PULLEN & SONS.
Out of business.

RALLS COUNTY COAL CO.
General Office, Hannibal, Mo.
Shaft Mine; Seam, 26 in. thick.
PO—Perry, Mo.; SP—Same; CTY—Ralls; RR—St. L. & Hannibal, Perry Br.
PR—J. T. Seaton.....Hannibal, Mo.
TR—J. T. Seaton, " "
GM—J. T. Seaton, " "
PA—J. T. Seaton, " "
MS—Tom Waterson.....Perry, Mo.
S of H—Mules.
S of M—Hand.
PP—Gasoline engine.
EMP—25. Last fiscal year output, 14,000 tons.

REESE, DAVE, COAL CO.
Shaft Mine, 4 ft. thick.
PO—Rich Hill, Mo. CTY—Bates. RR—Mo. Pac.
S of H—Rope.
S of M—Hand.
EMP—20. State report.

RELIANCE COAL CO.
Stripping Mine; Seam, 30 to 36 in. thick.
PO—Clinton, Mo; SP—Brownington, Mo.; CTY—Henry; RR—Frisco.
PR—J. D. Livingston, Kingsbury Place, St. Louis, Mo.
GM—J. D. Livingston, Kingsbury Place, St. Louis, Mo.
PA—J. D. Livingston, Kingsbury Place, St. Louis, Mo.
TR—F. C. Livingston, Kingsbury Place, St. Louis, Mo.
GS—A. Newbill, Deepwater, Mo.
S of H—Steam Hoist..
PP—4 Pumps.
EMP—30 to 50.
Output, 150 tons per day.
Successors to The Brownington Coal Co.

RICHMOND-CAMDEN COAL CO.
Leased to The Martin & Hubbell Coal Co.

RITCHIE COAL MNG. COMPANY.
Ritchie Mine, Slope, Seam, 4 to 6 ft. 3 in. thick.
PO—Rich Hill, Mo. SP—Same. CTY—Bates. RR—Mo. Pacific.
PR—H. C. Ritchie, .. Rich Hill, Mo.
GM—Wm. Ritchie, " "
PA—Wm. Ritchie, " "
S of H—Mules. Track gauge 35½ in.
S of M—Hand.
PP—Boiler, 30 H. P., 2 pump.
EMP—7. Last fiscal year output 3750 tons. Sales agent, Jones Coal Co.

ROGERS COAL CO.
Mine No. 9, Drift, Seam, 3 ft. thick.
PO—Mendota, Mo. SP—Same. CTY—Putnam. RR—C. B. & Q.
PR—John Rogers, Sr.....Mendota, Mo.
MS—John Rogers, Sr..... " "
VP—Jesse Rogers ..... " "
SECY—B. H. Johnston, Centralia, Wash.
S of H—Mules. Track gauge 37 in.
EMP—40.

ROMBAUER COAL CO.
See Davis Creek Coal Co.

ROTHVILLE COAL MINING CO.
Happy Hollow Mine, Drift, Seam 16 to 20 in. thick.
PO—Rothville, Mo. SP—Same. CTY—Chariton. RR—A. T. & S. F.
PR—A. T. Semple .....Rothville, Mo.
GM—O. B. Cameron..... " "
S of H—Hand. Track gauge 20 in.
S of M—Hand.
EMP—10. Last fiscal year output 700 tons.

RUSSELL COAL & MNG. CO.
See Howard County Coal Co.

SMITH, H. T.
Wear Mine, Stripping, Seam 4½ ft. thick.
PO—Rich Hill, Mo. SP—Same. CTY—Bates. RR—Mo. Pac.
GM—H. T. Smith.....Rich Hill, Mo.
GS—H. T. Smith..... " "
PA—R. A. Bailey.....Rich Hill, Mo.
EM—E. Ellis.....Rich Hill, Mo.
S of H—Mules.
S of M—Hand.
PP—1 pump. Last fiscal year output 1,400 tons.

STANDARD COAL CO.
Succeeded by Standard Fuel Co.

STANDARD FUEL CO.
Shaft Mine; Seam, 30 in. thick.
PO—Vandalia, Mo.; SP—Same; CTY—Audrain; RR—C. & A.
PR—W. D. Stacey.....Vandalia, Mo.
TR—George Burge, " "
GM—George Burge, " "
PA—George Burge, " "
MS—J. R. Stacey, " "
S of H—Mules.
S of M—Hand.
PP—1 Pump.
Sales Agent, George Burge, Vandalia, Mo.
Successors to the Standard Coal Co.

STAR COAL CO.
Star Mine No. 1, Shaft, Tebo Seam 20 to 26 in. thick.
PO—Kirksville, Mo. SP—Same. CTY—Adair.
PR—Chas. Miller .....Kirksville, Mo.
TR—A. H. Garges ..... " "
GM—C. J. Baxter ..... " "
MS—Thos. Dawson ..... " "
S of H—Mules. Track gauge 30 in.
S of M—Electric Machine.
PP—Compressor and 1 pump. Power purchased.
EMP—20. Last fiscal year output 6,6650 tons.

SUNSHINE COAL CO.
Shaft Mine; Seam, 36 to 44 in thick.
PO—Rich Hill, Mo.; SP—Same; CTY—Bates; RR—Mo. Pac., Fort Scott Br.
PR—George J. Reik....Rich Hill, Mo.
GM—George J. Reik, " "
TR—B. A. Reik, " "
S of H—Mules.
S of M—Hand.
PP—Pumps.
EMP—5. Last fiscal year output, 6,591 tons.

WALNUT BLOCK COAL CO.
Shaft Mine, Seam 32 in. thick.
PO—Melbourne, Mo. CTY—Harrison.
S of H—Rope and mules.
Note—Mine not working at present, June 20.

WALNUT CREEK COAL CO.
General Office, Shukert Bldg., Kansas City, Mo.
Black Diamond No. 2 Mine; Slope; Mulberry Seam, 34 to 40 in. thick.
PO—R. F. D., Hume, Mo.; SP—Foster, Mo.; CTY—Bates; RR—Mo. Pac., Madison Br.
PR—H. M. Herrold, Jr., Kansas City, Mo.
TR—A. F. Benosky, " " "
S of H—Mules.
S of M—Hand.
PP—2 Pumps.
EMP—6 to 30. Last fiscal year output, 4,270 tons.
Development work going on for past 2 years.

WALTON COAL CO.
Walton Mine; Shaft; Seam 36 to 48 in. thick.
PO—Higbee, Mo.; SP—Same, CTY—Randolph; RR—C. & A. and M. K. & T.
PR—Wm. Walton.....Higbee, Mo.
GM—Wm. Walton ..... " "
PA—Wm. Walton ..... " "
TR—John Cosgrove .....Boonville, Mo.

WAVERLY COAL CO.
General Office, Kansas City, Mo.
Buckham Mine; Shaft; Waverly Seam, 36 to 60 in. thick.
Continued on Next Page.

PO—Waverly, Mo.; SP—Same; CTY—Lafayette; RR—Mo. Pac. River Div.
PR—Col. F. B. Drage, Kansas City, Mo.
TR—F. W. Lukins....Kansas City, Mo.
GM—F. W. Lukins, " "
PA—F. W. Lukins, " "
EM—N. R. Andrews....Higginsville, Mo.
MS—S. Baker.....Waverly, Mo.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—7 Elec. mach.
PP—3 Erie City, return tubular boilers, total 425 H.P., gen. unit, 250 volts D.C., 1 pump.
EMP—85. Last fiscal year output 28,200 tons.

WEAR COAL CO.
Abandoned Dec., 1914.

WEIR, EMMETT
PO—Rich Hill, Mo. CTY—Bates. No report.

WESTERN COAL & MNG. CO.
General Office, St Louis, Mo. 6 mines in Missouri, 3 mines in Arkansas, 1 mine in Illinois, 8 mines in Kansas.
Valley, Midway, Summit, South, East and West Mines, Shafts, Seam 22 in. thick.
PO—Lexington, Mo. SP—Myrick, Mo. CTY Lafayette; RR Mo. Pac.
PR—W. J. Jenkins.....St. Louis, Mo.
TR—F. M. Hickman....St. Louis, Mo.
GM—W. J. Jenkins..... " "
GS—J. H. Shaw..... " "
PA—D. Simpson..... " "
EM—C. L. Moorman . " "
MS—B. T. Wiley.....Lexington, Mo.
S of H—Mules and elec.
S of M—Elec. mach.

WINE BROS.
Black Plumb, Shaft, Seam 28 in. thick.
PO—Brookfield, Mo. CTY—Linn. RR—H. & St. Jo.
PR—H. C. Wine.....Brookfield, Mo.
GM—I. E. Wine..... " "
S of H—Mules. Track gauge 24 in.
S of M—Hand.
EMP—15. Last fiscal year output 1,885 tons.

MONTANA

For List of Abbreviations See Page 498.

ALBA COAL COMPANY.
Alba Mine, Slope, Fort Union Seam, 60 to 72 in. thick.
PO—Fromberg, Mont., SP—Same; CTY—Carbon, RR Northern Pacific.
PR—J. C. McCarthy....Fromberg, Mont.
GM—J. C. McCarthy, " "
PA—J. C. McCarthy, " "
TR—F. G. Weber, " "
MS—J. P. Johnston, " "
S of H—Rope. Track gauge 30 in.
S of M—4 Comp. air machines.
PP—2 Return tubular boilers, total 200 H. P., 1 compressor, and 1 pump. Sales agent, J. C. McCarthy, Fromberg, Mont.

ANACONDA COPPER MNG. CO.
(Coal Dept.)
General Office, Butte, Mont.
PR—B. B. Thayer, 42 Broadway, New York City
GM—F. W. C. Whyte..Anaconda, Mont.
PA—D. A. Welch.....Butte, Mont.
EM—R. R. Vail....Diamondville, Wyo.
Sales agent, Geo. Blinn, Butte, Mont.

Washoe No. 2 Mine, Slope, "Bear Creek No. "283", Seam 78 in. thick.
PO—Washoe, Mont. SP—Same. CTY—Carbon.
RR—Montana, Wyoming and Southern.
MS—Thos. Good .....Washoe, Mont.
S of H—Horses, and 1 gasoline locomotive. Track gauge 3 ft.
S of M—Hand.
PP—3 return tubular boilers, 1 pump.
EMP—200. Last fiscal year output 121,249 tons.

Lochray Mine, Drift, Sand Coulee Seam, 6 to 8 ft. thick.
PO—Sand Coulee, Mont. SP—Tracy, CTY—Gascade. RR—G. N., Sand Coulee Branch.
MS—Chas. A. Sederholm, Sand Coulee, Mont.
S of H—Mules and 1 electric locomotive. Track gauge 3 ft.
S of M—Hand and 5 elec. mach.
PP—2 pumps, purchase power.
EMP—170— Last fiscal year output 104,000 tons.

ANDERSON & EVANS.
Controls 2440 acres of coal lands.
Hoffman Mine, Slope, No. 1, 2, 3 Seams, 3 to 7 ft. thick.
PO—Hoffman, Mont. SP—Same. CTY—Park. RR—N. P. Ry., Y. P. Ry.
GM—J. W. Anderson....Hoffman, Mont.
MS—T. J. Evans..... " "
EM—Chas. Sachett...Livingston, Mont.
SCO—Hoffman Merc. Co., Buyer, Guy E. Teter, Hoffman, Mont.
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—2 fireboxes, total 60 H. P., 1 pump.
Note—Operation suspended.

BEAR CREEK COAL CO.
South Nos. 2 and 3 Mines; Slopes No. 3 Seam; 72 to 78 in. thick.
PO—Bear Creek, Mont. SP—Same. CTY—Carbon. RR—Montana, Wyo & Sou. Ry.
PR—A. H. Barth.....Billings, Mont.
TR—J. B. Herford, " "
GM—J. H. Clark....Bear Creek, Mont.
Cashier—J. H. Clark " " "
PA—J. H. Clark.... " " "
MS—M. J. McCabe, " "
MM—J. W. McDonald " " "
EE—J. W. McDonald " " "
EM—R. S. Robbins..Red Lodge, Mont.
S of H—4 electric locomotives. Track gauge 40 in.
S of M—7 chain breast elec. machines.
PP—4 Atlas water tube boilers, total 600 H. P., 250 volts D. C.
EMP—162. Last fiscal year output 90,000 tons.
Sales Agents, National Fuel Co. Billings, Butte and Great Falls, Mont., H. M. Yaw, Great Falls, Mont.; H. H. Griffith, Butte, Mont., and C. H. Wicks Coal Co., Spokane, Wash.

BITUMINOUS COAL CO. (W. E. Pinkney, Lessee.)
Slope Mine, Bridger Seam.
PO—Fromberg, Mont SP—Same. CTY Carbon. RR—N. P.
GM—W. E. Pinkney.....Bridger, Mont.
PA—W. E. Pinkney.... " "
EM—T. E. Weethee.... " "
MS—Wm. Currie.....Fromberg, Mont.
S of H—Elec. loco. and rope.
S of M—Elec. mach. and hand.
PP—3 boilers, total 300 H. P., 1 gen. units 2300 volts A. C.

BRIDGER COAL MINING CO.
Bridger Mine; Slope; Seam 72 to 108 in. thick.
PO—Bridger, Mont. SP—Same CTY—Carbon. RR—N. Pac., Bridger Branch.
PR—W. E. Pinkney....Bridger, Mont.
GM—W. E. Pinkney, " "
PA—W. E. Pinkney, " "
TR—M. E. Dent, " "
EM—Theo. Turley, " "
MM—Theo. Turley, " "
EE—Theo. Turley, " "
MS—Mason Sauger, " "
CE—M. G. Swan.....Fromberg, Mont.
S of H—Rope and 1 Elec. loco.
S of M—Hand and 1 electric machine.
PP—5 Return tubular boilers, total 500 H. P., 2 gen. units, 500 volts D. C., 2 pumps.
EMP—47. Last fiscal year output, 36,000 tons.

BRODIE, JAMES & SON.
No. 1 Mine; Drift; Seam 54 to 78 in. thick.
PO—Belt, Mont.; CTY—Cascade; RR—Great Northern.
TR—J. W. Brodie, ...Belt, Mont.
S of M—2 Elec. mach. and hand.
PP—Boiler 15 H.P., power purchased.
EMP—12. Output 9,286 tons.

CALONE & JOHNSON.
Calone and Johnson Mine; Drift; Seam, 66 in. thick.
PO—Belt, Mont.; CTY—Cascade.
S of H—Mules.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—6. Last fiscal year output, 6,500 tons.

BROWN COAL CO.
PO—Sand Coulee, Mont., CTY—Cascade; EMP—45. Last fiscal year output, 52,946 tons.

CARBON COAL CO.
Carbon Mine, Slope, Sand Coulee Seam. 72 to 120 in. thick; PO—Sand Coulee, Mont. SP—Same. CTY—Cascade. RR—G. N., Sand Coulee Branch.
PR—George Wilson..Sand Coulee, Mont.
GM—George Wilson.. " "
MS—George Wilson.. " "
TR—Agnes Wilson, " "
PA—A. Morton .. " "
EM—John Morton .. " "
MM—Clifford Lefever, " "
S of H—Tail rope. Track gauge 3 ft.
S of M—4 compressed air machines.
PP—4 return tubular boilers, total 160 H. P., 1 comp., 4 pumps.
EMP—40. Last fiscal year output, 56,000 tons. Sales Agent, Steeren & Yaw, Great Falls, Mont.

COTTONWOOD COAL CO.
General Office, St. Paul, Minn
Nos 5, 6 and 7 mules, Drift.
PO—Stockett, Mont. SP—Same. CTY Cascade. RR—G. N.
GM—James Pearson....Stockett, Mont.
PA—F. A. Bushnell....St. Paul, Minn.
EM—R. A. Burns.....Stockett, Mont.
MS—W. Numan ..... " "
SM—A. J. Kruger..... " "
S of H—Rope, mules and elec. loco.
S of M—Elec. and comp. air machine.
PP—5 boilers, total 100 H. P., gen. units A. C.

DAVIS COAL CO.
PO—Roundup, Mont.; CTY—Musselshell; EMP—88. Last fiscal year output, 26,179 tons. No report.

HORSKY COAL MINE.
Out of business.

INTERNATIONAL COAL CO.
International Mine, Slope and Drift, No. 8 and 4 Seams; 66 in. thick.
PO—Bear Creek, Mont. SP—Same. CTY—Carbon. RR—M. W. & S.
PR—W. A. Talmage ....Billings, Mont.
TR—B. G. Shorey..... " "
GM—H. H. Pinkney, Bear Creek, Mont.
EM—H. H. Pinkney, " "
MS—Peter Pryde....
S of H—Mules, rope and 2 Elec. mach.; track gauge, 36 in.
S of M—5 Elec. mach. and hand.
PP—4 water tube boilers, 1 gen. unit. 220 volts D. C., 2 pumps.
EMP—140. Last fiscal year output, 70,000 tons. Sals Agent, International Coal Co., Billings, Mont.

LOCHRAY COAL CO.
PO—Sand Coulee, Mont.; CTY—Cascade; EMP—45. Last fiscal year output, 49809 tons. No report.

MACKTON COAL CO. (THE)
Mackton Mine; Slope; Fort Union Seam, 7½ to 9 ft. thick, operate washery.
PO—Big Sandy, Mont. SP—Same. CTY—Chouteau. RR—Great Northern.
PR—Paul H. Schwartz. Big Sandy, Mont.
GM—Paul H. Schwartz. " "
TR—Hans H. Lehfeldt. " "
PA—Hans H. Lehfeldt. " "
MS—L. S. Proctor ... " "
CE—L. S. Proctor .... " "
S of H—Rope. Track gauge 36 in.
S of M—Hand and 3 Elec. mach.
PP—4 return tubular boilers, total 400 H. P., 3 gen. units, 500 volts D. C., 2 pumps.

MERKLE, GEO. W., COAL CO.
Drift Mine, 54 to 84 in. thick.
PO—Belt, Mont.; SP—Same; CTY—Cascade; RR—Great Northern.
PR—G. W. Merkle, ...Belt, Mont.
GM—G. W. Merkle, " "
TR—G. W. Merkle, " "
GS—G. W. Merkle, " "
MS—A. Brutofski, " "
S of H—Rope; track gauge, 42 in.
S of M—Hand.
PP—2 Return tubular boilers.
EMP—45. Output for 3 months 6000 tons.
Sales Agency, Consolidated Coal Co., Great Falls, Mont.

MILK RIVER COAL CO.
Milk River Mine, Slope, Lignite Seam 6 ft. thick.
PO—Chinook, Mont. SP—Same. CTY—Blaine. RR—Great Northern.
PR—Jurgen Kuhr .....Chinook, Mont.
GM—Jurgen Kuhr ..... " "
TR—Thos O'Hanlon .... " "
MS—Clarence Sargent .. " "
S of H—Mules.
S of M—Hand.
PP—1 pump.
EMP—6 to 18. Last fiscal year output 6,500 tons.

MONTANA COAL & COKE CO.
Out of business.

MONTANA COAL & IRON CO.
Drift and Slope Mines, Nos. 2 and 3 Seams, 5 ft. 8 in. thick.
PO—Washoe, Mont. SP—Bear Creek, Mont. CTY—Carbon. RR—M. W. & S.
PR—C. R. Smith.....Menasha, Wis.
TR—C. W. Stone.....New York, N. Y.
GM—J. M. Freeman ....Washoe, Mont.
PA—J. M. Freeman .... " "
MS—J. M. Freeman .... " "
S of H—Mules, rope and 2 Electric locomotive. Track gauge 3 ft.
S of M—6 electric machines.
EMP—200. Last fiscal year output, 150,000 tons.

MOUNTAIN HOUSE COAL CO.
Slope.
PO—Hoffman, Mont. CTY—Park. RR N. P.
GM—J. W. Anderson....Hoffman, Mont.
MS—Thos. J. Evans.... " "
S of H—Rope.
S of M—Hand.
PP—2 boilers, total 500 H. P.
EMP—40.
Note—Operation suspended.

NELSON COAL CO.
General Office, Great Falls, Mont.
Economy Mine; Drift; Seam 96 in. thick;
PO—Sand Coulee, Mont. SP—Same. CTY—Cascade. RR—G. N., Sand Coulee Branch.
PR—John W. McClure, Great Falls, Mont.
TR—John W. McClure. " "
GM—Jas. P. Danson, " "
PA—Jas. P. Danson, " "
MS—I. T. Robinson, Sand Coulee, Mont.
EM—E. C. Roglun... " "
MM—H. F. Thoma... " "
EE—H. F. Thoma... " "
S of H—Mules, rope and 1 electric locomotive. Track gauge 36 in.
S of M—Hand and 14 compressed air machines.
PP—Generating units, A. C., 3 phase, 60 cycles, 1 air compressor, 2 pumps, purchase power.
EMP—150. Last fiscal year output 32,804.61 tons.

NORTHWESTERN IMPROVEMENT CO.
General Office, Tacoma, Wash.
Red Lodge Mine, Slope, "Semi Bituminous" Seam, 5 to 12 ft. thick, operate washery.
PO—Red Lodge, Mont. SP—Same. CTY—Carbon. RR — Norther Pacific, Rocky Fork Branch.
PR—William P. Clough..New York City.
VP—Thomas Cooper....St. Paul, Minn.
TR—C. A. Clark..... " "
PA—D. S. Kinney....Tacoma, Wash.
GM—C. C. Andersen....Tacoma, Wash.
Comptroller—M. P. Martin, " "
MS—Wm. Haggerty....Red Lodge, Mont.
EM—E. M. Cortright, Red Lodge, Mont.
EM—E. M. Cortright.. " "
MM—Thos. J. Murphy.. " "
EE—Thos. J. Murphy.. " "
S of H—Rope and 18 Elec. loco; track gauge 36 in.
S of M—Hand.
PP—7 B. and W. water tube boilers, 4 Erie return tubular boilers, total 2,200 H. P., 5 generating units, 2,300 volts, A. C., single phase, 60 cycles and 250 volts D. C., 3 pumps.
EMP—850. Last fiscal year output, 832,981 tons.
Sales Agent, Wm. Freakes, Red Lodge, Mont.

OREGON & MONTANA COAL CO.
Drift Mine.
PO—Sand Coulee, Mont. SP—Same. CTY—Cascade. RR—Great Northern.
Continued on Next Page.

OREGON & MONTANA COAL CO.—CONT'D.
GM—R. W. Wilson..Sand Coulee, Mont.
PA—R. W. Wilson.. " "
EM—R. W. Wilson.. " "
MS—R. W. Wilson.. " "
S of H—Horses.
S of M—Comp. air mach.
PP—Boiler, 80 H. P.

PINE CREEK COAL CO.
Out of business.

STAINSBY & LATHAM COAL CO.
Stainsby Mine, Drift.
PO—Sand Coulee, Mont. SP—Same. CTY—Cascade. RR—Great Northern.
GM—Wm. Stainsby..Sand Coulee, Mont.
PA—Jas. Latham .. " "
S of H—Mules.
S of M—Hand.
EMP—20.

RAINBOW COAL MINE.
See Carbon Coal Company.

REPUBLIC COAL CO.
General Office, Ottawa, Ill.
Klein No. 2, Shaft, Roundup Seam, 6 ft. thick.
PO—Klein, Mont. SP—Same. CTY—Musselshell. RR—C. M. & St. P.
PR—E. D. Sewall.....Chicago, Ill.
TR—F. G. Ranney..... " "
PA—J. T. Crocker..... " "
GM—Jas. Needham .....Ottawa, Ill.
GS—Jas. Needham ..... " "
EM—C. F. Brenn ..... " "
MM—Albert Gately.....Klein, Mont.
MS—Wm. Redshaw. " "
SCO—Bull Mountain Trading Co.
S of H—Mules and 2 Elec. and 2 gasoline loco.; track gauge 42 in.
S of M—Hand and 10 elec. machines.
PP—2 pumps, return tubular boilers, total 1,000 H. P., 2 gen. units D. C.
EMP—444. Last fiscal year output, 500,000 tons.

ROUNDUP COAL MNG. CO., THE
General Office, Omaha, Neb.
PR—G. W. Megeath.....Omaha, Neb.
GM—J. E. Woodard....Roundup, Mont.
GS—J. E. Woodard, " "
PA—J. E. Woodard, " "
VP—H. Y. Readinger, " "
TR—H. Y. Readinger, " "
CE—C. K. Bain, " "
EM—C. K. Bain, " "
MM—L. E. Brown, " "
EE—L. E. Brown, " "
Sales agent, J. E. Woodard, " "

Roundup Mine, "A" Slope, "Roundup" Seam, 4 to 6 ft. thick.
PO—Roundup, Mont. SP—Same. CTY—Musselshell. RR—C. M. & St. P.
MS—John Motis.....Roundup, Mont.
S of H—Mules, rope and 5 elec. locos. Track gauge 42 in.
S of M—6 elec. machines.
PP—Water tube boilers, total 800 H.P.

Roundup Mine "B," Slope, Seam 4 ft. thick.
PO—Roundup, Mont. SP—Same. CTY—Musselshell. RR—C. M. & St. P.
MS—Ed. Dugan, ... Roundup, Mont.
S of H—Mules and rope. Track gauge 42 in.
S of M—Hand.
PP—Water Tube boilers, total 500 H.P.

SMOKELESS & SOOTLESS COAL CO.
S. & S. Mines, Drift and Slope, No. 2 and No. 3 Seam, 7 to 10 ft. thick.
PO—Washoe, Mont. SP—Bear Creek. CTY—Carbon. RR—M. W. & S., N. P. Branch.
PR—J. F. Brophy, ... Washoe, Mont.
GM—J. F Brophy, " "
PA—J. F. Brophy, " "
TR—K. C. Brophy, " "
EE—Carl Johnson, " "
S of H—3 elec. and 2 steam hoists with ropes. Track gauge 36 in.
S of M—6 elec. machines.
PP—3 return tubular boilers, total 330 H. P., 2 gen. units, 250 volts, D. C., 3 pumps.
EMP—50 to 75. Last fiscal year output 50,000 tons. Sales agent, V. F. Toomey, Washoe, Mont.

WASHINGTON MONTANA COAL & DEVELOPMENT CO.
Maxey Mine, Slope and drift.
PO—Chimney Rock, Mont. SP—Cooks Mine Station, Mont. CTY—Park. RR—N. P.
PA—John Maxey,..Chimney Rock, Mont.
MS—Wm. Maxey, " "
SM—David Maxey, " "
EM—C. L. Hower,.... Spokane, Wash.
S of H—Mules.
S of M—Comp. air machines.
PP—4 boilers, 320 H. P.
EMP—65.

NEW MEXICO

For List of Abbreviations See Page 498.

ALBUQUERQUE & CERILLOS COAL CO.
General Office, Albuquerque, N. M.
PR—G. A. Kaseman, Albuquerque, N. M.
TR—G. A. Kaseman, " "
GM—G. A. Kaseman, " "
PA—G. A. Kaseman, " "
GS—W. L. Dixon.....Madrid, N. M.
MM—D. F. Cavanaugh, " "
EE—D. F. Cavanaugh, " "
SCO—Madrid Supply Co., " "
Sales Agency, G. A. Kaseman, Albuquerque, N. M.; Southern Coal Co., Amorillo, Tex.; Dallas, Tex., and Wichita, Kan.; S. C. Awbrey & Co., El Paso, Tex.; C. F. Heaton & Co., Los Angeles, Cal.

No. 4 Anthracite Mine; Slope; Hard Coal Seam, 30 to 38 in. thick.
PO—Madrid, N. M.; SP—Waldo, N. M.; CTY—Santa Fe; RR—A. T. & S. F.
S of H—Mules and rope.
S of M—Hand.
PP—2 Babcock & Wilcox stirling water tube boilers, total 600 H. P., 2 gen. units, 2,300 volts A. C., 3 phase, 60 cycles; 1 pump.
EMP—100. Last fiscal year output, 70,000 tons.

Holen and Jones Mines; Slope and Drift; Cook and White Seam, 34 to 48 in. thick.
PO—Madrid, N. M.; SP—Same and Waldo, N. M.; CTY—Santa Fe; RR A. T. & S. F.
S of H—1 Elec. loco and mules.
S of M—Hand.
PP—From No. 4 Anthracite Mine; 1 pump.
EMP—100. Last fiscal year output, 50,000 tons.

BAUDDINY CO.
Baudino Mine; CTY—McKinley.
GM—Frank Baudiny....Gibson, N. Mex.
State report.

BROWN BROS.
Out of business.

CARTHAGE FUEL CO.
General Office, San Antonio, N. M.
Carthage Mines, Slope, Carthage Seam, 4½ to 6½ ft. thick.
PO—Carthage, N. M. SP—Same. CTY—Socorro. RR—New Mexico, Midland.
PR—Powell Stackhouse, Jr. San Antonio, N. M.
GM—Powell Stackhouse, Jr., San Antonio, N. M.
PA—Powell Stackhouse, Jr., San Antonio, N. M.
TR—E. C. Brechtel, " "
MS—B. H. Kinney, ..Carthage, "
MM—R. E. Mounday, " "
EE—R. E. Mounday, " "
SCO—Carthage Merc. Co. Buyer, Wm. MacDougall, Carthage, N. M.
S of H—Rope and elec. Track gauge 36 in.
S of M—Hand.
PP—2 Casey Hedges return tubular boilers, total 300 H. P., 1 gen. unit, 2,200 volts, 3 phases and 60 cycles, 2 compressors.
EMP—135. Last fiscal year output, 49,542 tons. Sales Agent, Powell Stackhouse, Jr., San Antonio, N. M.

COAL BASIN CO.
Beddow Mine; Shaft.
PO—Gallup, N. M. CTY—McKinley.
GM—R. R. Pollock, Albuquerque, N. M.
MS—P. Westwater.....Gallup, N. M.

DIAMOND COAL CO., THE
General Office, Albuquerque, N. M.
Diamond Mine, Shaft, Seam 3 to 6 ft. thick.
PO—Allison, N. M. SP—Galleys, N. M. CTY—McKinley, RR—A. T. & S. F.
PR—T. E. Pollock.....Flagstaff, Ariz.
TR—M. E. Hickey, Albuquerque, N. M.
GM—R. R. Pollock, " "
PA—R. R. Pollock, " "
SM—R. R. Pollock. " "
MS—Pete Westwater....Allison, N. M.
MM—F. J. Allison, " "
S of H—Mules, rope and 1 gasoline loco. Track gauge 4 ft.
S of M—7 Comp. air mach.
PP—4 Kewanee return tubular boilers, total 360 H. P., 1 air comp., 1 pump.
EMP—185. Last fiscal year output 178,937 tons. Sales agent, R. R. Pollock, Albuquerque, N. M.

EMERSON & ALLAIRE.
General Office,.... San Antonio, N. M.
Emerson Mine, Slope, Carthage Seam, 6 to 7 ft. thick.
PO—Carthage, N. M. SP—San Antonio, N. M. CTY—Socorro. RR A. T. & S. F.
GM—P. A. Allaire, San Antonio, N. M.
MS—R. E. Law.....Carthage, N. M.
PA—Allaire McIntyre Co.
SCO—Allaire McIntyre Co., Buyer, P. A. Allaire.
S of H—Rope. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 120 H.P., 1 air comp., 1 pump.
EMP—30. Out put for 4 months, 6,000 tons. Sales agent, Allaire McIntyre Co., San Antonia, N. Mex.

ENTERPRISE COAL CO.
Drift Mines; Lignite Seam; 44 to 64 in. thick.
PO—Gallup, N. M.; SP—Same; CTY—McKinley; RR—A. T. & S. F.
PR—Stewart Brown.....Gallup, N. M.
TR—Hutchinson Brown, " "
GM—W. L. McVicker, " "
PA—W. L. McVicker, " "
MS—A. H. McVicker, " "
S of H—Mules (will install gasoline motors).
S of M—Hand (will install elec. mach).
EMP—22. Last fiscal year output, 2,400 tons.
Sales Agency, Santa Fe Fuel Co., El Paso, Texas.

GALLUP SOUTHWESTERN COAL CO. LTD.
Gallup Southwestern Mine, Slope, "Black Diamond" Seam, 4 to 6½ ft. thick.
PO—Gallup, N. M. SP—Same. CTY—McKinley. RR—A. T. & S. F.
PR—Samuel Atherton, Shrewsbury, Eng.
TR—Nicholas Hengel, ..Gallup, N. M.
GM—Sharp Hanson, " "
MS—Sharp Hanson, " "
S of H—steam locos. Track gauge 36 in.
S of M—Hand.
PP—boiler, 70 H.P.
EMP—28. Last fiscal year output 23,320 tons.

GOVERNMENT MINE.
Zuni River Mine, Drift.
PO—Black Rock, N. M. CTY—McKinley.
GM—R. J. Bauman, Black Rock, N. M.
MS—Frank Armanini. " "
S of H—Gravity.
S of M—Hand.

HENDRICKSON, W. I.
Kirtland Mine, Slope, Seam 5 to 11 ft. thick.
PO—Fruitland, N. M. SP—Farmington N. M. CTY—San Juan. RR—D. R. G. R.
PR—W. I. Hendricks..Kirtland, N. M.
MS—Jesse Foutz, .. Fruitland, "
S of H—Horses. Track gauge narrow.
S of M—Hand. Last fiscal year output 1,000 tons.

JONES, G. W.
Enterprise Mine; CTY—San Juan.
GM—G. W. Jones....Pendleton, N. Mex.
State report.

LUCHETTI COAL CO.
Kutz Mines, Slope, Monero Seam, 3 to 4½ ft. thick.
PO—Monero, N. M. SP—Same. CTY—Rio Arriba. RR—Durango N. Gauge.
MS—A. Luchetti, ... Monero, N. M.
SM—Felix Garcia, ..Lumberton, N. M.
SCO—Lumberton Mercantile Co.,
S of H—Rope and mules. Track gauge 30 in.
S of M—Hand.
PP—Boilers, 80 H. P.
EMP—15. Last fiscal year output 7,500 tons.

NEW MEXICO COLORADO COAL & MINING CO.
General Office, Raton, N. M.
Yankee Mine; Drift; Yankee Seam, 36 to 84 in. thick.
PO—Yankee, N. M.; SP—Same; CTY—Colfax; RR—S. F. R. & E.
PR—Manton B. Metcalf, New York, N. Y.
TR—L. Lafin Kellogg, 115 Broadway, New York, N. Y.
GM—Robert Lawrence, ...Raton, N. M.
PA—Lee S. Kellogg, " "
GS—H. L. Handley, ...Yankee, N. M.
MS—H. L. Handley, " "
EM—H. L. Handley, " "
SCO—Yankee Mercantile Co., Yankee, N. M.
S of H—1 Elec. loco.
S of M—3 Elec. mach. and hand.
PP—1 Frost, 1 Erie City return tubular boilers, total 300 H.P., gen. unit 2,200 volts A. C., 3 phase, 60 cyles, 2 pumps.
EMP—150.
Sales Agent, Robert Lawrence, Raton, N. M.

RIO ARRIBA COAL CO.
Out of business.

SAN LUIS COAL CO.
See Luchetti Coal Co.

ST. LOUIS, ROCKY MTN. & PACFIC CO.
General Office, Raton, New Mexico.
PR—J. Van Houten..Raton, New Mexico
GM—Allan French, " "
TR—Charles Springer " "
PA—Allan French ... " "
EM—Frank A. Young. " "
MM—John Evans, Jr. " "
EE—John Evans, Jr. " "
SCO—Blossburg Mercantile Co. Buyer, A. R. Quick, Raton, N. M. Sales agent, J. C. Larkin, Raton, N. M.

Koehler Mine, Drift, Raton Seam, 4 to 12 ft. thick. Operate washery.
PO—Koehler, N. M. SP—Same; CTY—Colfax RR—St. L. R. M. & P., Koehler Branch.
MS—Walter Kerr .....Koehler, N. M.
SM—Chas. Wildenstein, " "
S of H—Mules and 6 Elec. locomotives. Track gauge 40 in.
S of M—Hand and 2 Elec. mach.
EMP—350. Last fiscal year output, 576,568.40 tons.
Coke Ovens—210 Bee Hive.

Van Houten Mine, Drift, Raton Seam, 4 to 12 ft. thick.
PO—Van Houten, N. M. SP—Same. CTY—Colfax. RR—A. T. & S. F., Hebron Branch.
MS—James Stewart..Van Houten, N. M.
SM—Ernest Brunelli.. " "
S of H—Mules and 5 elec. locomotives. Track gauge 40 in.
S of M—Hand and 10 Elec. mach.
EMP—300. Last fiscal year output 525,839.30 tons.

Brilliant Mine, Drift, "Brilliant" Seam, 4 to 7 ft. thick.
PO—Brilliant, N. Mex. SP—Same. CTY—Colfax. RR—A. T. & S. F., Dillon Branch.
MS—Peter Gardner ...Brilliant, N. M.
SM—M. R. Boyer, " "
S of H—Mules and 1 elec. locomotive. Track gauge 40 in.
S of M—Hand, 2 elec. mach.
EMP—150. Last fiscal year output 140,935.30 tons.

Gardiner Mine, Drift, "Raton" Seam, 4 to 7 ft. thick, operate washery.
PO—Gardiner, N. Mex. SP—Same. CTY—Colfax. RR—A. T. & S. F., Dillon Branch.
MS—James Burkholder .Gardiner, N. M.
SM—J. C. Moore " "
S of H—Mules and 1 elec. locomotive.
S of M—Hand.
PP—3 return tubular boilers, total 350 H. P., 1 generating unit, 550 volts, also purchase power.
Continued on Next Page.

EMP—125. Coke Ovens—200 Bee Hive. Last fiscal year output, 87,606.80 tons.

Sugarite Mine, Drift, "Raton" Seam, 4 to 6 ft. thick.
PO—Sugarite, N. Mex. SP—Same. CTY—Colfax. RR—Santa Fe, Raton & Eastern, Sugarite Branch.
MS—Bert Lloyd .....Sugarite, N. M.
SM—John Evans ..... " "
S of H—Mules and 2 elec. locomotives.
S of M—Hand and 4 elec. machines.
PP—3 return tubular boilers, total 600 H. P., 2 generating units, 550 volts, 2 pumps.
EMP—150. Last fiscal year output 136,377.25 tons.

STAG CANON FUEL CO.
No. 1, 2, 3, 4 and 5 Mines; Slopes; "Blossburg" or "Raton" Seam, 5 to 11 ft. thick, operate washery.
PO—Dawson, N. Mex. SP—Same. CTY—Colfax. RR—E. P. and S. W. Sys.
GM—T. H. O'Brien ..Dawson, N. M.
MS—Wm. Hutchings ... " "
PA—C. A. Austin..99 John St., N. Y.
PA—J. A. Hurst...Dawson, N. Mex.
SM—T. C. Hill.... " "
CE—C. Legrand .....Douglas, Ariz.
EM—F. R. Weitzel..Dawson, N. Mex.
SCO—Phelps, Dodge Merc. Co., Dawson, N. Mex. Buyer, W. H. Brophy, Bisbee, Ariz.
S of H—Mules, rope, 4 steam locomotives and 25 elec. locomotives. Track gauge 36 in. and 42 in.
S of M—Hand and 28 electric machines.
PP—Sterling boilers, total 2,200 H. P., 5 generating units, 2,300 volts, A. C., 3 phases, 25 cycles, 5 pumps, power distributed to substations and transformed to 260 V. D. C.
EMP—2,000 Last fiscal year output 1,500,000 tons. Coke Ovens—570 Bee Hive and underflue. Sales agent, Dawson Fuel Sales Co., Dawson, N. Mex.

STEVENS MINE.
CTY—San Juan.
GM—Thos. Evans....Fruitland, N. Mex.
State report.

THOMAS, W. H.
PO—Pendleton, N. Mex. CTY—San Juan.
No report.

VICTOR-AMERICAN FUEL CO.
General Office, Denver, Colo., 4 mines in N. Mex., 8 mines in Colorado.
TR—G. F. Bartlett.....Denver, Colo.
GM—W. J. Murray..... " "
PA—John McGowan..... " "
EM—Chief, F. W. Whiteside " "
MM—N. J. Chapin....Denver, Colo.
GS—D. H. Somerville..Gibson, N. Mex.
SCO—Western Stores Co., Buyer, W. H. Howell, Denver, Colo., Sales agent, W. H. Huff, Denver, Colo.

Weaver Mine, Slope, Seam, 60 to 66 in. thick.
PO—Gibson, N. Mex. SP—Gallup, N. Mex. CTY—McKinley. RR—A. T. & S. F.
MS—Ed. Thomas.....Gibson, N. Mex.
SM—M. M. Shelton... " "
S of H—Mules and rope. Track gauge 40 in.
S of M—Hand.
PP—Power furnished from a central plant.

Heaton Mine, Slope, Seam 40 to 48 in. thick.
PO—Heaton, N. Mex. SP—Gallup, N. Mex. CTY—McKinley. RR—A. T. & S. F.
MS—John Ambrose....Heaton, N. Mex.
S of H—Mules and rope. Track gauge 40 in.
S of M—Hand.
PP—Power furnished from Central plant.

Navajo Mine, Slope, Seam 68 to 73 in. thick.
PO—Gibson, N. Mex. SP—Gallup, N. Mex. CTY—McKinley. RR—A. T. & S. F.
MS—Ed. Cockburn....Gibson, N. Mex.
S of H—Mules and rope. Track gauge 40 in.
S of M—Hand.
PP—Power furnished from central plant.

WILD CAT CO.
Wild Cat Mine CTY Lincoln.
GM—A. A. Lane....White Oaks, N. Mex.

NORTH DAKOTA

For List of Abbreviations See Page 498.

BRUEGGER, JOHN
PO—Avoca, N. Dakota.
Not in operation.

CONSOLIDATED COAL CO.
Lehigh Mine, Slope, Seam 9 to 16 ft. thick.
PO—Lehigh, N. D. SP—Same. CTY—Stark. RR—Nor Pac.
PR—Amasa P. Peake.Valley City, N. D.
GM—J. F. Brodie.....Dickinson, N. D.
GS—J. F. Brodie, " "
PA—Jos. H. Schestak..Lehigh, N. D.
MS—Joseph H. Schestak, " "
S of H—Mules.
S of M—Hand and 3 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit 220 volts D. C., 1 pump.
EMP—25.

DAKOTA COAL PRODUCTS CO.
Slope, Upper Seam; 66 to 78 in. thick.
PO—New Salem, N. D. SP—Same. CTY—Morton. RR—N. P. Ry.
PR—W. W. Woodhall.Minneapolis, Minn.
TR—R. W. Webb... " "
GM—A. J. Gray....New Salem, N. D.
PA—A. J. Gray, " "
EM—A. J. Gray.... " "
MS—August Sundstron " "
CE—R. J. Gray, " "
EE—R. J. Gray, " "
S of H—Mules and Steam Hoists. Track gauge 36 in.
S of M—2 electric machines.
PP—Water tube boilers, 150 H. P., 1 generating unit, 260 volts D. C.
EMP—21. Last fiscal year output, 19,785 tons. Sales Agent, Norman Daffinsud, New Salem, N. D.

DAKOTA LIGNITE MINES CO.
General Office, Dickinson, N. D.
GM—Henry Truelsen..Dickinson, N. D.
TR—Henry Truelsen .. " "
PA—Henry Truelsen .. " "

Zenith No. 2 Mine, Slope, Lignite Seam, 18 to 22 ft. thick.
PO—Zenith, N. D. SP—Same, CTY—Stark. RR—N. P.
MS—August Teubert ....Zenith, N. D.
SCO—S. J. Cody & Co. Buyer, J. S. Cody, Zenith, N. D.
S of H—Mules and rope.
S of M—Hand.
PP—2 boilers, total 70 H. P.
EMP—20-30.

Pittsburgh Mine, Slope, Lignite Seam.
PO—Lehigh, N. D. SP—Same. CTY—Stark.
S of H—Mules and rope.
S of M—Hand.
PP—Boiler, 100 H. P.
EMP—20.

DAUGHERTY COAL CO.
Slope Mine; Seam 96 in. thick.
PO—Noonan, N. D.; SP—Same; CTY—Divide; RR—S. N. & Soo.
GM—Chas. Daugherty, ..Minot, N. D.
PA—Chas. Daugherty, " "
MS—W. E. Coleman, Noonan, N. D.
S of H—Steam loco.; track gauge 24 in.
S of M—Hand.
EMP—60. Last fiscal year output 37,000 tons.
Successors to C. Daugherty.

DAVIS COAL CO.
See the Northern Briquetting Co.

EVANSON, ED.
Now Noonan Coal Co.

GREENUP, J. S.
Greenup Mine, Slope and Stripping, Lignite Seam 7 to 11 ft. thick.
PO—Columbus, N. D. SP—Same and Stampede. CTY—Burke. RR—Sou, Flaxton Ambrose Br. and G. N. Berthold Crosby Br.
GM—Henry Zimdars..Columbus, N. D.
MS—Gust. Kielhack .. " "
S of H—Mules. Track gauge 32 in.
S of M—Hand.
EMP—10. Last fiscal year output 9,000 tons.

HIGH GRADE LIGNITE COAL CO.
Drift Mine; Seam 120 to 192 in. thick.
PO—Medora, N. D.; SP—Same CTY—Billings; RR—N. P, Main Line.
PR—N. D. Nichols, ...Medora, N.D.
TR—N. D. Nichols, " "
GM—B. L. Nichols. " "
GS—C. L. Zimmerman, " "
PA—C. L. Zimmerman, Medora, N. D.
MS—Conrad Zeigler.
MM—D. F. Olmstead, " "
CE—J. A. Willey, Jamestown, N.D.
S of H—Mules; track gauge 36 in.
EMP—14. Last fiscal year output, 12,316 tons.

KENMARE BRICK & COAL CO.
Brick Yard Mine, Slope, Seam 3 to 5 ft. thick.
PO—Kenmare, N. D. SP—Same. CTY—Ward. RR—Soo Line.
PR—N. J. Converse...Marshfield, Mo.
TR—Levi Lewis.....Victor, Ia.
GM—R. F. Lewis....Kenmare, N. D.
GS—R. F. Lewis..... " "
PA—R. F. Lewis..... " "
S of H—Mules. Track gauge 32 in.
S of M—Hand.
EMP—6. Last fiscal year output, 3132.5 tons.

LLOYD COAL CO.
General Office, Minot, N. D.
Paradise No. 1 and Foxholm No. 2, Slopes.
PO—Burlington, N. D. SP—(1) Same, (2) Foxholm. CTY—Ward. RR—Soo Line.
GM—David Lloyd .....Minot, N. D.
MS—Mr. Stewart....Burlington, N. D.
S of H—Mules and gravity.
S of M—Hand.

McCLURE COAL CO.
General Office, Minot, N. D.
Tasker Mine, Slope, Lignite Seam, 8ft. thick.
PO—Tasker, N. D. SP—Vanderwalker, N. D. CTY—Ward. RR—Minneapolis, St. Paul and Sault Ste Marie. Main Line.
PR—Geo. H. Atwood..Stillwater, Minn.
TR—Geo. E. McClure....Minot, N. D.
GM—Geo. E. McClure.... "
PA—Geo. E. McClure..Tasker, N. D.
MS—W. J. Verzatt, " "
SM—F. V. Bryant .... " "
S of H—Mules. Track gauge 29 in.
S of M—Hand.
PP—1 Atlas water tube boiler, total 125 H. P.
EMP—28. Last fiscal year output 24,404 tons.

NATIONAL BRIQUETTING CO.
General Office, 417 Plymouth Bldg., Minneapolis, Minn.
Smith's Mine; Slope; Seam 66 in. thick.
PO—Kenmare, N. D.; SP—Same; CTY—Ward; RR—Soo.
PR—F. W. Soule....Minneapolis, Minn.
TR—J. E. Soule, " "
GM—J. E. Soule, " "
MGR—F. E. Abbott, Kenmare, N. D.
PA—F. E. Abbott, " "
MM—F. E. Abbott, " "
EE—R. L. Hurstis, " "
MS—J. W. Dering, " "
S of H—Elec. loco. and mules; track gauge 30 in.
S of M—Hand.
PP—2 Return tubular boilers, 2 gen. units 110 volts A. C. and D. C.
EMP—35. Last fiscal year output, 20,386 tons.

NOONAN COAL CO.
White City Mine; Slope Seam 84 to 96 in. thick.
PO—Noonan, N. D. SP—Same. CTY—Divide. RR—Great Northern.
GM—J. Lorbeski .....Noonan, N. D.
PA—J. Lorbeski ..... " "
MS—J. Lorbeski ..... " "
S of H—Gasoline loco. and rope.
S of M—Hand.
EMP—20 to 30. Last fiscal year output, 45,000 tons.

NORTHERN BRIQUETTING CO.
Davis Mine, Slope.
PO—Burlington, N. D. SP—Same. CTY—Ward.
GM—L. M. Davis...Burlington, N. D.
PA—L. M. Davis... " "
EM—L. M. Davis... " "
MS—W. A. Wiethoff " "
SM—W. A. Wiethoff " "
MF—Wm. Cozen .... " "
S of H—Rope.
S of M—Hand.
PP—Boiler, 85 H. P.
EMP—48.

SATTERLUND, JOHN
Drift Mine, "Lignite" Seam, 10 ft. thick.
PO—Washburn, N. D.; SP—Same; CTY—McLean RR—Soo.
GM—Edw. Kugler ...Washburn, N. D.
EM—Edw. Kugler ... " "
MM—Edw. Kugler ... " "
S of H—Mules. Track gauge 32 in.
S of M—1 compressed air machine
PP—1 return tubular boiler, total 55 H. P., 2 generating unit, 1 air compressor, 1 pump.
EMP—8. Last fiscal year output, 6,500 tons.

SCRANTON COAL CO.
Scranton Mine; Slope, Seam 228 in. thick.
PO—Scranton N. D.; SP—Same; CTY—Bowman; RR—C. M. & St. P.
GM—Chas. A. Liddell, Scranton, N.D.
PA—Chas. A. Liddell, " "
MS—Chas. A. Liddell, " "
EM—Chas. A. Liddell, " "
MM—Chas. A. Liddell " "
S of H—Mules.
S of M—Hand.
EMP—24. Output 10,064 tons.

TRUAX COAL CO.
Truax Mine, Slope, Lignite Seam, 7 to 8 ft. thick.
PO—Noonan, N. D. SP—Same. CTY—Divide. RR—G. N.. Ry., Curly Buthold.
PR—E. M. Truax.....Noonan, N. D.
GM—E. M. Truax..... " "
PA—E. M. Truax..... " "
SM—E. M. Truax..... " "
TR—Miss D. L. Truax, " "
EM—A. M. Leogelan, " "
MS—A. H. Truax..... " "
S of H—Gravity and 1 gasoline locomotive. Track gauge 28 in.
S of M—Hand.
PP—2 Boilers, total 170 H. P.
EMP—75. Last fiscal year output, 30,000 tons.

U. S. RECLAMATION SERVICE.
Reclamation Service, Mine Drift.
PO—Williston, N. D. SP—Same. CTY—Williams. RR—G. N.
GM—Wm. S. Arthurs....Willston, N. D.
PA—Wm. S. Arthur.. " "
SM—Wm. S. Arthur.. " "
MS—Wm. Hutchinson . " "
S of H—Mules.
S of M—Hand.
PP—8 boilers, total 2000 H. P. gen. units, 2,200 volts A. C.
EMP—40 to 65. Last fiscal year output, 45,000 tons.

WALLACE, J. S.
Wallace Mine, Drift Upper Larimy Seam, 9 to 10 ft. thick.
PO—Burlington, N. D. SP—Same. CTY—Ward. RR—Soo.
MS—John Miller ..Burlington, N. D.
S of H—Mules.
S of M—Hand.
EMP—25. Last fiscal year output 10,000 tons.

WASHBURN LIGNITE COAL CO.
General Office, Minneapolis, Minn.
Wilson Mine No. 1, Shaft, Seam 8 to 16 ft. thick.
PO—Wilton, N. D. SP—Same. CTY—McLean. RR—M. St. P. & St. M., N. P.
PR—B. W. Stephenson.Minneapolis, Minn
TR—W. H. Keller.... " "
GM—W. P. Macomber...Wilton, N. D.
GS—P. J. Cahill..... " "
PA—F. M. Pettygrove.... " "
SM—F. M. Pettygrove, Wilton, N. D.
MS—Thos. Jones and D. M. Quigley, Wilton, N. D.
EM—David Wilson ....Wilton, N. D.
MM—I. G. Iverson..... " "
EE—I. G. Iverson and B. Bartholomen, Wilton, N. D.
S of H—Mules and elec. locos
S of M—9 elec. machines.
PP—8 pumps, 6 boilers, total 900 H. P. Sales agent, W. P. Macomber, Wilton, N. D.

WILLISTON COAL & POWER CO.
Black Diamond Mine, Drift, Lignite Seam 11½ ft. thick.
PO—Williston, N. D. SP—Same. CTY—Williams. RR—Great Northern R. R.
PR—J. W. Jackson..Williston, N. D.
GM—J. W. Jackson.. " "
GS—Aleck Thompson . " "
MS—Aleck Thompson . " "
S of H—Mules.
S of M—Hand.
EMP—10. Last fiscal year output 5,000 tons.

ZENITH COAL CO.
See the Dakota Lignite Mines Co.

OHIO

For List of Abbreviations See Page 498.

AGRICULTURAL & COMMERCIAL LIME CO., THE
General Office, Canton, Ohio.
A. and C. Mine, Drift, No. 4 Seam, 3 to 5 ft. thick.
PO—North Industry, O. SP—Same. CTY—Stark. RR—B. & O.
PR—C. W. Keplinger.....Canton, O.
TR—H. J. Taggart..... " "
GM—H. J. Taggart..... " "
GS—Ed. J. Smith..North Industry, O.
MS—Rudy Frank ... " "
S of H—Mule. Track gauge 28 in.
S of M—Hand.
PP—2 return tubular Erie boilers, total 200 H. P.
EMP—35. New mine.

AKRON COAL CO. (THE)
General Office, Akron, O.
PR—Jas. P. Loomis.....Akron, O.
GM—Jas. P. Loomis..... " "
TR—J. M. Rowley..... " "
SECY—N. E. Thomas..... " "
PA—N. E. Thomas..... " "
GS—Wm. Rigby.....Cambridge, O.
CE—Wm. Rigby..... " "

Murry Hill No. 2, Slope Mine, No. 7, Cambridge Seam from 5½ to 7 ft. thick.
PO—Kipling, O. SP—Cambridge, O. CTY—Guernsey. RR—B. &O.
MS—Wm. Rigby .....Cambridge, O.
S of H—2 Elec. loco. and mules, track gauge 42 in.
S of M—5 elec. machines.
PP—3 return tubular boilers, total 450 H. P., 1 gen, units, 150 volts D. C.
EMP—165. Last fiscal year output, 160,000 tons.

Silver Creek Mine, Drift Mine, No. 6 Goshen, 4½ ft. thick.
PO—Wainright, O.; SP—Tuscarawas, O.; CTY—Tuscarawas. RR—B. & O.
MS—W. D. Jones.....Wainright, O.
S of H—Mules, track 38 in. gauge.
S of M—2 Elec. mach.
PP—1 Erie return tubular boilers, 150 H. P., 75 K. W., 1 pump.
EMP—85. Last fiscal year output, 40,000 tons.
Klondyke Mine; Slope; No. 7 Cambidge Seam, 60 to 72 in. thick.
PO—Kipling, O.; SP—Cambridge, O.; CTY—Guernsey; RR—B. & O.
MS—Wm. Rigby.....Cambridge, O.
S of H—Rope; track gauge 42 in.
S of M—5 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C., 2 pumps.
EMP—160.
Last fiscal year output, 150,000 tons.

ALLBURN COAL CO.
Allburn Mine, Slope, Wellston, No. 2, Seam 22 to 42 in. thick.
PO—Wellston, O. SP—Same. CTY—Jackson. RR—C. H. V. & T.
PR—C. M. Reese.....Wellston, O.
PA—C. M. Reese, " "
GM—S. R. Poole ..... " "
MS—S. R. Poole ..... " "
TR—H. Reese .....Glen Roy, O.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—Purchase power.

AMERICAN CEMENT PLASTER CO.
General Office, Lawrence, Kans.
Banting No. 1 Mine; Slope; Gypsum Seam.
PO—Gypsum, O.; SP—Same; CTY—Ottawa; RR—N. Y. C.
PR—A. Henley.....Lawrence, Kans.
TR—J. A. Henley, " "
GM—R. A. Henley, " "
GS—R. A. Henley, " "
PA—R. A. Henley, " "
CE—John Joyce.....Port Clinton, O.
EM—E. J. Hughes, " " "
MS—E. J. Hughes, " " "
EE—L. V. Ayers, " " "
S of H—Mules.
S of M—5 Elec. mach.
PP—3 Water tube boilers, total 475 H. P., gen. units, 220 volts D. C., 1 pump.
EMP—75.
Last fiscal year output, 33,200 tons.
Successors to the Fishack Gypsum Co.

AMERICAN GYPSUM CO. (THE)
American No. 1 Mine, Shaft, Gypsum Rock, 6 to 8 ft. thick.
PO—Port Clinton, O. SP—Same. CTY—Ottawa. RR—L. S. and M. S.
PR—Jas. H. McCrady...Braddock, Pa.
TR—J. B. Davis .....Cleveland, O.
GM—F. J. Griswold...Port Clinton, O.
PA—F. J. Griswold... " "
GS—C. A. Loder .... " "
MS—A. C. Chase .... " "
EM—John J. Joyce... " "
MM—A. Fronta ..... " "
EE—A. C. Ruhl ..... " "
S of H—Electric, 1 elec. loco.
S of M—6 Elec machines, 4 air mach.
PP—3 water tube boilers, Heine Safety boiler, total 540 H. P., 1 gen. unit, 1 air compressor, 1 pump.
EMP—210. Sales agent, A. R. Black, Port Clinton, O.

AMERICAN SEWER PIPE CO.
General Office, Akron, O., 2 mines in Ohio and 1 in Indiana.
PR—Geo. R. Hill .....Akron, O.
TR—A. S. McCombe ..... " "
GM—A. S. McCombe..... " "
GS—Marshall Caine ..... " "
PA—B. J. Hill, " "
CE—R. H. Russell ..... " "
EM—R. H. Russell..... " "
EE—R. H. Russell..... " "
MM—W. H. Rook..... " "
No. 17 Mine, Drift; Pgh. No. 6 Seam, 28 to 48 in. thick.
PO—Ubrichsville, O. SP—Same. CTY—Tuscarawas. RR—B. & O.
MS—Walter B. Moore..Uhrichsville, O.
S of H—Mules. Track gauge 28 in.
S of M—Hand.
PP—1 gen. unit, 110 volts D. C., 1 pump.
EMP—14. Last fiscal year output, 9,484 tons. Consume our output at plants.

AMERICAN SHEET & TIN PLATE CO.
General Office, Pittsburgh, Pa.
Houk Mine, Drift, No. 7 Seam, 5 ft. thick.
PO—Stillwater, O. CTY—Tuscarawas.
MS—J. L. Houk.....Stillwater, O.
S of H—Motor and mules.
S of M—Hand.
EMP—63.

Aetna Mine, Drift.
PO—Aetnaville, O. CTY—Tuscarawas.
MS—Wm. Fitzgerald, Martin's Ferry, O.
EMP—59.

Laughlin Mine, Drift.
PO—Martin's Ferry, O., CTY—Belmont
MS—Edward Hite....Martin's Ferry, O.
S of H—Elec. loco. and mules.
S of M—Hand and elec. machines.
EMP—72.
State report.

ARMSTRONG COAL CO.
Armstrong, Lucy and Central mines, Slope and Drift, No. 2 Seam.
PO—Jackson, O.; SP—Same; CTY—Jackson. RR—D. T. & I.
GM—Guy Smales .....Jackson, O.
MS—S. Walker ..... " "
PA—Guy Sell ..... " "
EM—Bert Brown .....Coalton, O.
S of H—Mules and rope.
S of M—Hand.
PP—Boiler 50 H. P.
Coke Ovens, 125.

AUGUSTA COAL CO.
Augusta Mine, Drift, Pgh. No. 8 Seam, 4 ft. 10 in. to 5 ft. 2 in. thick.
PO—Rayland, O. SP—Warrenton. CTY—Jefferson. RR—W. & L. E.
PR—W. G. Peterkin.Parkersburg, W. Va.
TR—W. G. Peterkin " "
GM—Richards Coal Mng Co...Pgh., Pa.
PA—Richards Coal Mng Co... "
S of H—1 elec. loco. Track gauge 42 in.
S of M—4 elec. machines.
PP—1 return tubular boiler, total 150 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—75 to 100. Last fiscal year output 76,000 tons. Sales agents, Richards Coal Mng. Co., Pgh., Pa.

BAKEWELL COAL CO (THE)
Knob Mine, Drift, Pittsburg Seam No. 8, 5 to 6 ft. thick.
PO—Bellaire, O. SP—Carloads, Knob Mine Siding, Georgetown, Belmont Co., O. Less than carloads, Bellaire, O. CTY—Belmont. RR—B. & O. main line.
PR—J. L. Bakewell....Brownsville, Pa.
TR—T. W. Pearsall.....Bellaire, O.
PA—T. W. Pearsall..... " "
MS—J. C. Smith..... " "
S of H—3 elec. loco. Track gauge 40 in.
S of M—8 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 250 volts D. C., 1 pump.
EMP—275.

B. B. COAL CO.
Slope Mine; Seam 30 to 60 in. thick.
PO—Canal Fulton, O.; SP—Same; CTY—Stark.
PR—P. J. Blank, Canal Fulton, O.
TR—Wm. Blank, " " "
GM—Wm. Blank, " " "
PA—Wm. Blank, " " "
MS—John Blank, " " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, 100 H.P.
EMP—10.
2 pumps.

BARBER, O. C. MNG. & FERTILIZER CO. (THE)
General Office, 706 Courtland Building, Canton, Ohio.
Mine No. 1 and 2, Drifts.
PO—North Industry, O.; SP— Same; CTY—Stark; RR—B. & O.
PR—Ohio C. Barber.....Akron, O.
TR—L. D. Brown..... " "
GM—H. V. Briggle.....Canton, O.
PA—H. V. Briggle, " "
MS—E. W. Oldham, North Industry, O.
S of H—Mules and elec.
PP—Total boiler H. P. 675.
Sales Agent, S. L. Briggle, Canton, O.

BARNES COAL & MINING CO., (THE) ..
General Office, Coshocton, O.
PR—Rollin N. Barnes....Coshocton, O.
TR—Clyde F. Barnes, " "
PA—Clyde F. Barnes, " "
GM—Rollin N. Barnes, " "
GS—Rollin N. Barnes, " "
EE—H. G. Patton.
Sales Agents, Goff-Kirby Coal Co., Cleveland, O.

Best No. 1, Drift, Middle Kittanning Seam, 3½ to 5 ft. thick.
PO—Conesville, O., SP— Same, CTY—Coshocton; RR—W. & L. E.
MS—C. H. Crossley....Conesville, O.
S of H—Rope; track gauge 32 in.
S of M—3 Elec. mach.
PP—1 Erie water tube boiler, 150 H. P., 1 pump.

Best No. 2, Drift, Middle Kittanning Seam, 4 ft thick.
PO—Conesville, O., SP—Same, CTY—Coshocton; RR—W. & L. E.
S of H—1 Elec. loco., track gauge 42 in.
S of M—3 Elec. mach.
PP—1 water tube boiler, 150 H. P. 100 K. W., 120 volts D. C., 1 pump.
Note—Mines idle from April 1, 1914, to April 15, 1915.

BARTON COAL CO., (THE)
General Office, Cleveland, O.
Taggert Mine, Drift, Pittsburgh No. 8 Seam, 5 ft. thick.
PO—St. Clairsville, Ohio, SP—Same, CTY—Belmont; PO—B. & O., St. Clairsville Br.
PR—H. W. Townsend..New London, O.
TR—A. W. Dean.....Cleveland, O.
GM—P. Townsend, " "
PA—A. J. Wiegand, " "
S of H—Mules and 2 elec. loco. Track gauge 42 in.
S of M—8 Eec.. mach.
PP—250 Volts, D. C., 3 pumps.
EMP—120. Last fiscal year output 98,000 tons.

BEAR RUN COAL CO
Bear Run Mine; Drift; No. 4 Seam 4 ft. thick.
PO—Eifort, O.; CTY—Lawrence; RR—B. & O. S. W.
MS—O. T. Hughes.
EMP—21. State Report.

BEECH FLATS COAL CO.
General Office, Danville, Ill.
Sunshine Mine; Stripping; Pitsburgh No. 8 Seam, 58 in. thick.
PO—Rush Run, O.; SP—Same; CTY—Jefferson; RR—Penna.
PR—W. G. Hartshorn....Danville, Ill.
GM—W. G. Hartshorn, " "
TR—D. W. Bell, " "
MS—W. B. Reid.....Rush Run, O.
EE—Frank Burns, " "
S of H—2 Steam loco.; track gauge 42 in.
S of M—1 Comp. air mach.
PP—2 Boilers, 1 gen. unit, 3 phases, 60 cycles, 1 air comp., 1 pump.
EMP—60. Last fiscal year output 68,000 tons.
Sales Agent, Douglas Vass, Wheeling, W. Va.

BEECHWOOD MASSILLON COAL CO.
See The Barton Coal Co.

BERGHOLZ COAL CO. (THE)
See Wright & Zehner Co.

BIG FOUR CLAY CO., (THE)
PR—W. A. White.....Canton, O.
TR—G. B. French, " "
GM—G. B. French, " "
PA—G. B. French, " "
GS—R. W. Sharer.....Malvern, O.
EM—Joe Keister.....Minerva, O.
CE—L. D. Klotz.....Waynesburg, O.

Big Four Drift, Drift, No. 6 Seam, 40 in. thick.
PO—Malvern, O., SP—Oneida or Malvern, O., CTY—Carrol, RR—Penna. R. R.
MS—Joe Keister.....Minerva, O.
S of H—Mules and rope.
S of M—Hand.
PP—Steam piped from Brick Plant boilers.
EMP—13. Last fiscal year output, 5,029 tons.

Big Four Slope, Slope, No. 5 Seam, 33 in thick.
PO—Malvern, O., SP—Oneida or Malvern, O., CTY—Carrol; RR— Penna R. R.
MS—Joe Keister.....Minerva, O.
S of H—Mules and cable.
S of M—Hand.
PP—Steam piped from boilers at Brick plant.
EMP—12. Last fiscal year output, 5,029 tons.

BIG FOUR COAL CO.
Broadwell Mine, Drift.
PO—Broadwell, O.; SP—Same; CTY—Athens; RR—M. C. & C.
GM—J. A. Wells.....Broadwell, O.
EM—J. A. Wells, " "
PA—D. J. Caslin, " "
MS—Dan. W. James, " "
S of H—Rope and mules.
S of M—Elec.
PP—250 volts, D. C.

BIG VEIN COAL CO.
General Office, Cleveland, O.
Garside Mine, Shaft, Seam 5 ft. thick.
PO—Salineville, O.; SP—Same; CTY—Columbiana; RR—Penna.
PR—A. W. Osborne.....Cleveland, O.
TR—W. L. Robinson, " "
GM—L. G. Brooks, " "
PA—S. L. Thompson " "
MS—W. P. Crookstan...Salineville, O.
EE—E. G. Schubert, " "
EM—F. E. Hanlon.....Barton, O.
S of H—Mules and 1 elec. loco., track gauge 44 in.
S of M—5 elec. mach.
PP—2 Erie return tubular boilers, total 300 H. P., 550 volts D. C.
EMP—210.

BIXLER-OHIO COAL CO.
General Office, Columbus, O.
Cochran No. 2 Mine; Drift; No. 8 Seam, 48 in. thick.
PO—Baileys Mills, O.; SP—Same; CTY—Belmont; R—B. & O.
PR—R. H. Evans.....Zanesville, O.
TR—J. C. McVey.....Columbus, O.
PA—J. C. McVey, " "
GM—J. E. Jones, " "
GS—J. E. Jones, " "
EM—E. L. Elkins.....Bellaire, O.
MS—Wm. Beynon....Baileys Mills, O.
S of H—2 Elec. loco. and mules; track gauge, 42 in.
S of M—5 Elec. mach.
PP—2 Boilers, total 350 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—100.
Sales Agent, Ira Bixler, Pittsburg, Pa.

BLACK DIAMOND CO. (THE)
General Office, Columbus, Ohio.
Black Diamond Mine, Drift, Pittsburgh Seam No. 8; 64 in. thick.
PO—Lathrop, Ohio, SP—Same, CTY—Athens; RR—M. C. and C. R. R.
PR—J. H. Earnshaw.....Columbus, O.
TR—Henry L. Gilbert....Columbus, O.
GM—Henry L. Gilbert, " "
PA—Henry L. Gilbert, " "
MS—Geo. W. Chambers....Lathrop, O.
EM—Arthur Anderson.....Athens, O.
SCO—Gorham Store Co., Lathrop, O.
S of H—2 Elec. loco., track gauge 42 in.
S of M—7 Elec. machines.
PP—3 Return tubular Union Iron Works boilers, total 450 H. P., 2 gen. units, 500 volts D. C., 1 pump.
EMP—160. Coke ovens 50, Bee Hive. Last fiscal year output, 110,000 tons.

BLAIR & RICHARDS.
Wigwam Mine.
PO—Shawnee, O.; SP—Dixie, O.; CTY — Perry.
No report.

BLAIR, A. G., MINING CO., (THE)
General ffOice, Toledo, Ohio.
Majestic Mine, Drift, Pittsburgh No. 8 Seam, 5 ft. thick.
PO—Blairmont, O., SP—Same, CTY—Harrison; RR—W. & L. E. RR.
PR—A. G. Blair, Jr.....Toledo, O.
GM—J. C. Blair ..... " "
GS—J. C. Blair ..... " "
PA—S. C. Cripe, " "
MS—Wm. Moke, ...Adena, O.
EM—Wm. Hibbs .....Scio, O.
EE—Earl Scott .....Blairmont, O.
SCO—Hastings Mdse. Co., Adena, O.
Auditor—F. W. Crabbs.....Toledo, O.
S of H—Mules, and 2 elec. loco., track gauge 42 in.
S of M—8 Elec. mach.
PP—4 boilers, 2 Gen. units 250 volts D. C., 3 pumps.
EMP—190. Last fiscal year output 90,000 tons.
Sales Agents, A. G. Blair Co., Toledo, O.

BLUE JAY COAL CO. (THE)
General Office, Wellston, Ohio.
Burr Oak Mine, Slope, Sedalia No. 7 Seam, 53 in. thick.
PO—Corning, O.; SP—Burr Oak, O.; CTY—Perry, RR—T. & O. C.
PR—H. A. Goddard.....Wellston, O.
TR—C. E. Littler, " "
GM—W. S. McCloud, " "
PA—W. S. McCloud, " "
EM—E. R. Kelly.....Wellston, O.
MS—Edward Dempsey.....Corning, O.
S of H—Mules, track gauge 42 in.
S of M—3 Elec. mach.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—35.

BLUE ROCK COAL CO.
Mine destroyed by flood.

BLYTH COAL CO. (THE)
General Office, 707 House Bldg., Pgh., Pa.
Jean Mine, Drift, Pgh. Seam, 5 ft. thick.
PO—Brilliant, O.; SP—Same and Rush Run; CTY—Jefferson; RR—P. R. R., C. & P. Div.
PR—John P. Bracken, 707 House Bldg., Pgh., Pa.
TR—Max Bruening, 707 House Bldg., Pittsburgh, Pa.
GS—John O'Neil.....Brillant, O.
S of H—1 Elec. loco. and mules; track gauge 44 in.
S of M—6 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 3 pumps.
EMP—100.

BOWEN, R. W., COAL CO.
Bowen Mine Drift; No. 6 Seam, 48 in. thick.
PO—Millersburg, O.; SP—Killbuck, O.; CTY—Holmes; RR—P. R. R., Hardy Br.
GM—R. W. Bowen.....Millersburg, O.
PA—R. W. Bowen, " "
MS—R. W. Bowen, " "
S of H—Mules; track gauge, 34 in.
S of M—Hand.
EMP—12. Last fiscal year output, 3,000 tons.

B. R. COAL & MINING CO.
General Office, Nelsonville, Ohio.
Drift Mine; No. 6 Hocking Valley Seam, 48 to 60 in. thick.
PO—Carbon Hill, Ohio; SP—Same; CTY—Hocking RR—H. V., Dorr Run Br.
PR—S. P. Booth.....Columbus, O.
TR—G. D. Ridenour....Nelsonville, O.
PA—G. D. Ridenour, " "
GM—G. W. Ross.....Carbon Hill, O.
S of H—Mules.
S of M—1 Elec. mach.
EMP—6.
Output about 50 tons per day.

BRETTELL BROS.
Drift Mine; Pittsburgh No. 8 Seam, 54 to 60 in. thick.
PO—Mingo Junction, O.; SP—Same; CTY—Jefferson; RR—P. R. R.
GM—Thos. Brettell, Jr., Mingo Junction, O.
PA—Thos. Brettell, Jr., " "
MS—E. J. Brettell, " "
CE—Jas. Bowers, ...Weirton, W.Va.
S of H—1 Elec. loco. and mules.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—40. Last fiscal year output 11,000 tons.
Sales Agent, Thos. Brettell, Jr.

BROWN, R. G. & H. R.
Brown's Mine, Drift; 3 ft. 8 in. thick.
PO—New Philadelphia, O., CTY—Tuscarawas.
GM—H. R. Brown, New Philadelphia, O.
MS—H. R. Brown,.....New Phila., O.
S of H—Mules; track gauge 30 in.
S of M—1 Comp. air mach.
PP—1 air comp.; 1 pump. Purchase power.
EMP—7. Last fiscal year output 9,588 tons.

BROWNE COAL CO (THE)
Browne No. 2 Mine; Slope.
PO—Wellston, O.; SP—Cornelia, O.; CTY—Jackson; RR—D. T. & I.
GM—J. H. Browne.....Wellston, O.
PA—J. H. Browne, " "
EM—Edward Kelly, " "
MS—David Sanders " "
EE—Wm. Yarrington, " "
S of H—Mules and 1 elec. loco.
S of M—5 Elec. mach.
PP—2 boilers, total 300 H. P., gen. unit, 250 volts D. C.

BUCKEYE COAL MINING CO.
See Elkins Coal Co.

BUCKHORN COAL CO.
PO—Jep, O.; CTY—Lawrence.
No report.

BURLINGTON COAL CO.
Burlington Mine; Slope; Pittsburgh No. 8 Seam, 60 to 68 in. thick.
PO—Martins Ferry, O.; SP—Same; CTY—Belmont; RR—P. R. R., B. & O., W. & L. E.
PR—E. K. DeLancy, Martins Ferry, O.
TR—Louis H. Helling, " "
GM—Louis H. Helling, " "
PA—Louis H. Helling, " "
EM—Carl Lash, " "
S of H—Mules.
S of M—1 Elec. mach.
PP—2 Gen. units 250 volts D.C.
EMP—5.

BURN COAL CO.
Succeeded by J. F. Schuler & Son.

BURR OAK COAL CO.
General Office, New First National Bank Bldg., Columbus, O.
Burr Oak Mine; Slope; No. 7 Up. Freeport Seam, 54 to 60 in. thick.
PO—Burr Oak, O.; SP—Palos, O.; CTY—Athens; RR—K. & M., T. O. C. Br.
PR—H. D. Shepard.....Burr Oak, O.
GM—H. D. Shepard, " "
TR—I. R. Denon, " "
GS—J. M. Murday, " "
MS—J. M. Murday, " "
S of H—Mules.
S of M—1 Elec. mach.
PP—2 Water tube boilers, total 500 H. P., 2 pumps.
Last fiscal year output, 30,000 tons.
Sales Agency, Blue Jay Coal Co.

BURTON-TOWNSEND CO.
General Office, Zanesville, O.
Monitor No. 1 Mine; Drift; No. 6 Seam, 42 in. thick.
PO—S. Zanesville, O.; SP—Darlington, O.; CTY—Muskingum; RR—Penna., Zanesville Div.
PR—R. C. Burton.....Zanesville, O.
TR—C. A. Case, " "
GM—C. A. Case, " "
PA—C. A. Case, " "
MS—Enos Miller.....S. Zanesville, O.
EE—W. H. Stallsmith " "
EM—P. S. Sniffen.....Nelsonville, O.
S of H—4 Elec. loco.; track gauge, 42 in.
S of M—8 Elec. mach.
EMP—100. Last fiscal year output, 61,305.3 tons.

CALLAHAN COAL CO.
Greenamyer Shaft Mine; Seam No. 3.
PO—Salem, O., R. D. No. 6; SP—Salem, O.; CTY—Columbiana.
GM—Homer Callahan.....Salem, O.
MS—Homer Callahan, " "
S of H—Mules.
S of M—Hand.
PP—1 return tubular boiler.
EMP—12. Last fiscal year output, 6,200 tons.

CAMBRIA CLAY PRODUCTS CO.
Seam, 24 to 36 in. thick.
PO—Blackfork, O.; SP—Same; CTY—Lawrence; RR—B. & O., S. W.
PR—D. D. Davis.....Oak Hill, O.
TR—S. P. Reitz.....Blackfork, O.
GM—S. P. Reitz, " "
PR—S. P. Reitz, " "
PP—2 Pumps. Power purchased.
S of H—Mules; track gauge, 36 in.
S of M—Hand.

CAMBRIA MINING CO. (THE)
General Office, Toledo, Ohio.
PR—Geo. M. Jones.....Toledo, O.
TR—T. B. Earl, " "
PA—T. B. Earl, " "
CE—O. S. Jones, " "
MM—John Merryman.....Bellaire, O.
Sales Agent, The Geo. M. Jones Co., Toledo, O.
Pultney Mine, Slope, Pittsburgh No. 8 Seam, 5 to 6 ft. thick.
PO—Bellaire, O., SP—Same, CTY—Belmont; RR— C. & P.
MS—J. E. Stoltz.....Bellaire, O.
S of H—4 elec. loco. Track gauge 40 in.
S of M—11 elec. mach.
PP—1 water tube and 2 return tubular boilers, total 400 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—400.

Webb Mine, Shaft, Pittsburgh No. 8 Seam, 5 to 6 ft. thick.
PO—Bellaire, O. SP—Webb, O. CTY—Belmont. RR—C. & P.
MS—A. Burger .....Bellaire, O.
S of H—1 elec. loco., track gauge 40 in.
S of M—3 Elec. mach.
PP—1 gen. unit 250 volts D. C., 1 pump.
EMP—200.

CAMBRIDGE COLLIERIES CO., (THE)
General Office, Cleveland, O.
PR—A. A. Augustus....Cleveland, O.
TR—E. J. Hanglin, " "
GM—C. D. Jury, " "
PA—F. J. Butler, " "
GS—H. E. Cameron.....Cambridge, O.
EM—W. L. Bomsberger, " "
EE—W. H. Davis, " "

Laura Mine, Shaft, No. 7 Seam, 4 to 6 ft. thick.
PO—Cambridge, O. SP—Coal Ridge, O. CTY—Guernsey; RR— Penna. Lines, C. & M. Div.
S of H—3 Elec. loco., track gauge 42 in.
S of M—7 Elec. mach.
PP—3 Return tubular boilers, 3 gen. units 250 volts D. C., 3 pumps.
EMP—275.

Caldwell Mine, Shaft, No. 7 Seam 4 to 6 ft. thick.
PO—Cambridge, O. SP—Caldwell, O. CTY—Guernsey; RR— Penna. Lines, C. & M. Div.
S of H—4 Elec. loco., track gauge 42 in.
S of M—8 Elec. mach.
PP—4 Return tubular boilers, 3 gen units 250 volts D. C., 4 pumps.
EMP—275.

Buffalo, Ideal, Trail Nos. 1 and 2 Mines, Shaft, No. 7 Seam, 4 to 6 ft. thick.
PO—Cambridge, O. SP—Byesville, O. CTY—Guernsey; RR— Penna. Lines, C. & M. Div.
S of H—14 Elec. loco., track gauge 42 in
S of M—30 Elec. mach.
PP—16 Return tubular boilers, 9 gen. units 250 volts D. C., 14 pumps.
EMP—1040

Banner and Walhonding, No. 2 Mines, Shaft, No. 7 Seam, 4 to 6 ft. thick.
PO—Cambridge, O., SP—Pleasant City, O., CTY—Guernsey; RR— Penna. Lines, C. & M. Div.
S of H—8 Elec. loco., track gauge 42 in.
S of M—16 Elec. mach.
PP—6 Return tubular boilers, 3 gen. units 250 volts D. C., 8 pumps.
EMP—358.

Blue Bell Mine, Shaft, No. 7 Seam, 4 to 6 ft. thick.
PO—Cambridge, O., SP—Opperman, O., CTY—Guernsey; RR—B. & O., Eastern Ohio.
S of H—3 Elec. loco., track gauge 42 in
S of M—7 Elec. mach.
PP—3 Return tubular boilers, 2 gen. units 250 volts D. C., 3 pumps.
EMP—218.

Hartford Mine, Shaft, No. 7 Seam, 4 to 6 ft. thick.
PO—Cambridge, O., SP— Buffalo, O., CTY—Guernsey; RR—B. & O., Eastern Ohio.
S of H—3 Elec. loco., track gauge 42 in.
S of M—7 Elec. mach.
PP—3 Return tubular boilers, 3 gen. units 250 volts D. C., 3 pumps.
EMP—180.
Note—Detroit and Midway Mines worked out, ceased operating.

CANAAN COAL CO., (THE)
Canaan Mine, Shaft, Middle Kittanning Seam, 5 to 8 ft thick.
PO—Canaanville, O., SP—Same, CTY—Athens. RR—B. & O. Southwestern.
PR—John E. Jones.....Jackson, O.
TR—Lewis V. Brown....Canaanville, O.
GM—Lewis V. Brown, " "
PA—Lewis V. Brown, " "
GS—James Allen, " "
EM—R. Rowland, " "
MM—C. E. Elder, " "
EE—C. E. Elder, " "
SCO—The Canaan Coal Co., Buyer, H. B. Larimer., Canaanville, O.
S of H—Mules, and 5 elec. loco., track gauge 42 in.
S of M—7 Elec. mach.
PP—2 B. & W. water tube and 5 H. T. boilers, total 1050 H. P., 3 gen. units, 250 volts D. C., 2 pumps.
EMP—283. Last fiscal year output 84,000 tons.

CANTON LIME & FERTILIZER CO.
See The O. C. Barber Mining & Fertilizer Co.

CAPTINA COAL CO.
Captina Mine, Shaft; "Pittsburgh No. 8" Seam; 6 ft. thick.
PO—Amstrong Mills, O.; SP—Captina, O.; CTY—Belmont; RR—O. R. W., Narrow gauge.
PR—Hunter Armstrong.
TR—John E. Barth..Armstrong Mills, O.
GM—Wm. Rennie, " "
S of H—Mules, track gauge 36 in.
S of M—2 elec. mach.
PP—2 Return tubular boilers, total 120 H. P., 1 gen. unit, 250 volts, D. C.; 3 pumps.
EMP—22. Last fiscal year output 25,000 tons.

CARD & PROSSER COAL CO, (THE)
General Office, Garfield Bldg, Cleveland, Ohio.
TR—Frederick W. Threnell, 318 Citizens Bldg., Cleveland, O.
GM—C. F. Brooks, 1201 Leader Bldg., Bldg., Cleveland, O.
GS—Thomas Morrison.....Lisbon, O.
EM—Herman Armstrong, " "

Peerless Mine, Slope, No. 3 Seam.
PO—Lisbon, O.; SP—Same; CTY—Columbiana. RR—Erie.
MS—J. F. Waters.....Lisbon, O.
S of H—Rope.
S of M—Hand.
PP—2 boilers, total 250 H. P.
EMP—85.

West Pittsburgh No. 3 Mine; Drift; No. 6 Seam, 42 to 72 in. thick.
PO—Teegarden, O.; SP—West Pittsburgh, O.; CTY—Columbiana; RR—Erie.
MS—D. Albaugh.....Teegarden, O.
S of H—Mules and 2 Elec. loco.
S of M—4 Elec. mach.
PP—2 Boilers, total 300 H. P., 2 gen. units, 250 volts D. C.
EMP—50. Last fiscal year output, 9,000 tons.

Clay Mine, Shaft, No 3 Clay Seam.
PO—Lisbon, O.; SP—Same; CTY—Co-
MS—Thomas Morrison.....Lisbon, O.
S of H—Mules. Track gauge, 38 in.
S of M—Hand.
PP—3 Erie City Return tubular boilers, total 300 H. P., 1 gen. unit.
EMP—27. Last fiscal year output, 27,000 tons.

CARBON COAL CO.
PO—Carbon Hill, O.; CTY—Hocking.
No report.

CARBON HILL COAL CO.
Succeeded by the Coe Mining Co.

CARBONDALE COAL CO., THE
General Office, Chillicothe, Ohio
PR—Richard Enderlin....Chillicothe, O.
TR—J. H. Greenbaum....Chillicothe, O.
SEC—E. W. Strong....Cincinnati, O.
GM—Richard Enderlin....Chillicothe, O.
EM—M. H. Doolittle....Carbondale, O.
GS—M. H. Doolittle, " "
PA—M. H. Doolittle, " "
EE—C. W. McDaniel, " "
SCO—Carbondale Coal Co., General Store Buyer, John Milar, Carbondale, O.

Carbondale No. 1 Mine, Drift, No. 6 Seam, 5 ft. 4 in. thick.
PO—Carbondale, O.; SP—Mineral, O.; CTY—Athens; RR—B. & O. S. W.
MS—T. Lane Hull.
S of H—2 Elec. loco., track gauge 40 in.
S of M—3 elec. machines.
PP—2 pumps, power furnished from No. 2 plant.
Annual output 80,000 tons.

Carbondale No. 2 Mine, Drift, No. 6 Seam, 6 ft. 2 in. thick.
PO—Carbondale, O., SP—Same, CTY—Athens; RR—B. & O. S. W.
MS—R. Ford Doolittle..Carbondale, O.
S of H—2 Elec. loco., track gauge 42 in.
S of M— 4 Elec. mach.
PP—4 Return tubular, Erie City boilers, total 400 H P., 2 gen. units 250 volts D. C., 1 pump.
EMP—260. Last fiscal year output, 100,000 tons.

CARNEGIE STEEL CO. (COAL MINING DEPT.)
General Office, Pittsburgh, Pa.
Drift Mine; Pgh. No. 8 Seam, 57 to 75 in. thick.
PO—Bellaire, O.; SP—Same; CTY—Belmont; RR—P. R. R., B. & O.
PR—A. C. Dinkey, ...Pittsburgh, Pa.
TR—W. C. McCausland " "
PA—J. M. Taylor, " "
GS—G. E. Wisener, ...Bellaire, O.
MS—B. F. Marling, " "
EM—E. Bond, " "
MM—William Siddall, " "
EE—John Cooper, " "

Continued on Next Page.

CARNEGIE STEEL CO.—CONTINUED.
S of H—1 Elec., 1 steam loco and mules.
S of M—3 Elec. mach.
PP—4 Gen. units each 250 volts D.C.
EMP—60. Annual output 96,800 tons.

CENTRAL HOCKING COAL CO.
General Office, Columbus, Ohio.
Mine No. 15, Drift, No. 6 Hocking Seam, 8 ft. thick.
PO—Carbon Hill, O., SP—Same, CTY—Hocking. RR—Hocking Valley, Sand Run Branch.
PR—Elmer Miller.....Toledo, O.
GM—C. Cohenour.....Columbus, O.
TR—C. Cohenour ..... " "
PA—C. Cohenour, " "
GS—T. J. McLeish....Carbon Hill, O.
EM—W. J. Berry..New Straitsville, O.
S of H—1 Elec. loco., track gauge 42 in.
S of M—5 Elec. mach.
PP—100 K. W., Motor Generator Set, 250 volts, 1 gen. unit D. C., 4 pumps. Power purchased.
EMP—100. Annual output 90,000 tons.

CHAPMAN COAL CO. (THE)
Leased to Hayes Coal Co.

CLARION COAL & LIMESTONE CO.
Out of business.

CLIFTON COAL CO, THE
Drift Mine; Hocking Seam No. 6, 48 to 72 in. thick.
PO—Nelsonville, O.; SP—Same; CTY—Athens; RR—H. V.
PR—John C. Baird.....Nelsonville, O.
PA—John C. Baird, " "
TR—C. S. Baird, " "
GM—C. S. Baird, " "
EM—P. S. Sniffen, " "
Track gauge 42 in.
EMP—20. Last fiscal year output, 1500 tons.

CLOVER LEAF COAL CO.
Nebo Mine, Shaft.
PO—Bergholz, O. CTY—Jefferson.
MS—H. O. Ray.....Mineral City, O.
S of H—Mules.
EMP—10.
State report.

COCHRAN COAL CO.
Out of business.

COE MINING CO. (THE)
Out of business.

COLBURGH COAL CO. (THE)
General Office, Columbus, O.
Media Mine, Drift, No. 8 Pittsburgh Seam, 5 ft. thick.
PO—Baileys Mills. SP—Same. CTY—Belmont. RR—B. & O.
PR—E. M. Poston.....Columbus, O.
GM—E. M. Poston, " "
TR—C. W. Thompson..... " "
PA—C. W. Thompson..... " "
GS—Edward Lynch ...Baileys Mills, O.
MM—Wm. Booth, " "
EE—Joe Perkins. " "
CE—J. L. Murphy.....Nelsonville, O.
EM—L. Gano Logan, " "
S of H—4 elec. loco. Standard gauge.
S of M—7 Elec. mach.
PP—2 return tubular Atlas Hafner boilers, total 300 H. P., 2 gen. units. 250 volts D. C. and 2 pumps.
EMP—130. Last fiscal year output, 130,000 tons. Sales agents, New York Coal Co., Columbus, O.

COLUMBUS COAL MNG. CO. (THE)
Franklin No. 2 Mine, Drift, Middle Kittanning Seam, 2½ to 4 ft. thick.
PO—Coshocton, O. SP—Tyndall, O. CTY—Coshocton. RR—P. C. C. & St. L., Franklin Branch.
PR—Francis N. Barnes..Coshocton, O.
TR—Clyde F. Barnes.... " "
GM—Francis N. Barnes... " "
GS—Rollin N. Barnes... " "
PA—Clyde F. Barnes... " "
MS—J. S. Kitchen, R. F. D. 5, Coshocton, O.
S of H—Mules. Track gauge 32 in.
S of M—Hand.
Note—Mine idle, June 7, 1915.

CORNING MINING CO. (THE)
General Office, Toledo, O.
Corning Mine, Slope, Hocking No. 6 Seam, 6 ft. thick.
PR—T. B. Earl .....Toledo, O.
TR—T. B. Earl..... " "
PA—T. B. Earl..... " "
S of H—1 elec. loco. Track gauge 42 in.
S of M—5 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—150. Last fiscal year output 85,000 tons. Sales agents, The Geo. M. Jones Co., Toledo, O.

CORWIN, TOM, COAL CO.
Out of business.

DANHAER BROS COAL CO.
Sold to G. Nutter.

DAVIS COAL CO.
Drift Mine, No. 6 Seam.
PO—Conesville, O. SP—Same. CTY—Coshocton. RR—P. C. C. & St. L., Davis Conesville Branch.
GM—Jas. G. Davis.....Conesville, O.
MS—Jas. G. Davis.... " "
MF—A. C. Dawson .... " "
S of H—Mules.
S of M—2 comp. air machines.
PP—1 return tubular boiler, 1 compressor, 1 pump.
EMP—30. Last fiscal output, 24,000 tons.

DAVIS, DAVID
Tyrone Mine, Drift, No. 6 Seam, 3½ to 4½ ft. thick.
PO—Conesville, O. SP—Same. CTY—Coshocton. RR—C. A. & C. Ry.
PR—David Davis .....Conesville, O.
GM—David Davis ..... " "
PA—David Davis ..... " "
MS—Jas. Larr ..... " "
S of H—Mules. Track gauge 36 in.
S of M—1 comp. air mach.
PP—1 water tube boiler, 100 H. P., 1 pump, 1 air compressor.
EMP—40. Last fiscal year output 14,635 tons.

DAVIS FIRE BRICK CO.
Davis Mine; Drift; No. 5 Seam, 36 to 48 in. thick.
PO—Oak Hill, O.; SP—Same; CTY—Jackson, O.; RR—B. & O.
PR—D. D. Davis.....Oak Hill, O.
TR—A. M. Davis, " "
PA—A. M. Davis, " "
GM—E. J. Davis, " "
CE—E. J. Davis, " "
GS—E. P. Davis, " "
MS—Geo. Sharpe, " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, 150 H. P., 1 air comp., and 2 pumps.
EMP—15 to 20. Last fiscal year output, 8,500 tons.

DECKMAN-DUTY BRICK CO.
General Office, Cleveland, O.
Sandy Valley Clay Mine, Drift, No. 6 Clay and Coal Seam, 34 in. thick.
PO—Malvern, O. SP—Same. CTY—Carroll. RR—Penna., Tuscarawas Branch.
PR—S. M. Duty.....Cleveland, O.
GM—S. M. Duty..... " "
TR—H. C. Moatz..... " "
PA—H. C. Moatz..... " "
GS—D. C. Humphrey.... " "
MS—J. C. Fisher.....Malvern, O.
CE—H. A. Ford ..... " "
S of H—Mules. Track gauge 29 in.
S of M—Hand.
EMP—20. Last fiscal year output, 5,000 tons.

DETROIT & WELLSTON COAL CO.
Superior No. 4 Mine, Slope, No. 2 Seam, 3 ft. thick.
PO—Wellston, O. SP—Same. CTY—Jackson. RR—B. & O., C. H. & D. System.
PR—J. E. Baumgartner..Wellston, O.
GM—J. E. Baumgartner.. " "
PA—J. E. Baumgartner.. " "
TR—J. W. Nixon..... " "
S of H—Mules.
S of M—Hand.
PP—2 water tube boilers.
EMP—25. Last fiscal year output 8,000 tons.

DEXTER COAL CO.
Receivers, J. C. Ault and Jos. H. Cassidy, Stubenville, O.
Goucher Mine, Drift, 4½ ft. to 5½ ft. thick.
PO—Brilliant, O. SP—Same. CTY—Jefferson. RR—C. & P. Div., Penna. R. R.
PA—J. C. Ault.....Stubenville, O.
S of H—Mules and 1 Goodman elec. loco. Track gauge 38 in.
S of M—6 electric machines.
PP—2 return tubular boilers, 1 gen. unit, 220 volts, 2 pumps.
EMP—185. Last fiscal year output 103,015 tons. Sales agent, J. E. Vincent, Pittsburgh, Pa.

DOANVILLE MINING CO.
PO—Nelsonville, O.; CTY—Athens.
No report.

DOMESTIC COAL CO., THE
Domestic Mine; Shaft; No. 2 Jackson Seam.
PO—Wellston, O.; SP—Same; CTY—Jackson.
RR—D. T. & I.
PR—H. W. Goddord.....Wellston, O.
GS—H. A. Goddord, " "
PA—H. A. Goddord, " "
EM—H. A. Goddord, " "
TR—L. C. Voglesang, " "
GM—L. C. Voglesang, " "
MS—C. Littlejohn, " "
EE—Henry Gray, " "
S of H—1 Elec. loco. and mules; track gauge, 38 in.
S ofM—7 Elec. mach.
PP—4 Return tubular boilers, total 400 H. P., gen. unit, 220 volts D. C., and 2 pumps.
EMP—150. Last fiscal year output, 32,000 tons.
Sales manager, H. B. Carruce, Wellston, O.

DOUGLASS COAL CO. (THE)
General Office, Columbus, O.
Drift Mine, No. 7 or Sedalia Seam, 46 to 50 in. thick.
PO—Glouster O.; SP—Palos, O.; CTY—Athens; RR—K. & M.
PR—F. J. Shaffer, (Temporary).
GM—E. D. Carr, ...Columbus, O.
PA—E. D. Carr, " "
S of H—Not yet installed.
S of M—Not yet installed.
Development will be started very shortly.

DOVER FIRE BRICK CO.
Dover Mine, Stripping, No. 5 Seam 2½ to 3 ft. thick.
PO—Strasburg, O. SP—Same—CTY—Tuscarawas. RR—B. & O.
PR—G. H. Ganson ....Strasburg, O.
TR—H. E. Stuhler..... " "
MS—R. Bowen ..... " "
S of H—Mules. Track gauge 34 in.
S of M—Hand.
Last fiscal year output 3,128 tons.

EAST HILL COAL CO. (THE)
General Office, Nelsonville, Ohio.
East Hill No. 4 Mine, Drift, Middle Kittanning or No. 6 Seam, 5 to 7½ ft. thick.
PO—Buchtel, O. SP—Same. CTY—Athens. RR—Hocking Valley, Snow Fork.
PR—John McMillen .....Buchtel, O.
TR—C. C. Sharp ....Nelsonville, O.
GM—John McMillen .....Buchtel, O.
GS—John McMillen ..... " "
PA—John McMillen ..... " "
EM—J. L. Murphy ....Nelsonville, O.
EE—Alfred May .....Buchtel, O.
SCO—Gibson & Son. Buyer, W. H. Gibson, Nelsonville, O.
S of H—Mules and 1 elec. motor. Track gauge 42 in.
S of M—4 elec. machines.
PP—1 return tubular boiler, 150 H. P., 1 gen. unit 250 volts D. C., 3 pumps.
EMP—93. Last fiscal year output 67,888.55 tons. Sales agent, W. A. Gosline & Co., Toledo, O.

EASTERN OHIO COAL CO.
PO—Canton, O.; CTY—Carroll.
No report.

ELK COAL COMPANY (THE)
General Office, Columbus, Ohio.
Elk Mine Drift; No. 6 Middle Kittanning Seam; 42 to 48 in. thick.
PO—Roseville, O. SP—Same. CTY—Muskingum. RR—Penna Co., Zanesville Div.
PR—John W. Moore ....Columbus, O.
TR—John W. Moore .... " "
GM—John W. Moore .... " "
EM—C. H. Terry ....Nelsonville, O.
GS—G. E. Ranney.....Roseville, O.
EE—W. E. Blosser.....Roseville, O.
PA—E. E. Learned ....Columbus, O.
SEC—E. E. Learned .... " "
MS—Robert Robb .....Roseville, O.
SCO—Ranney Grocery Co., Roseville, O. Buyer, S. E. Ranney, Roseville, O.
S of H—Mules and 2 elec. loco. Track gauge 35½ inches.
S of M—12 elec. machines.
PP—3 pumps. Power purchased. 500 volts, D. C.
EMP—175. Last fiscal year output, 118,067 ons. Sales agent, E. E. Learned, Columbus, O.

ELK FORK COAL CO.
PO—Wellston, O.; CTY—Jackson.
No report.

ELK RUN COAL CO.
Drift Mine; No. 6 Seam, 36 to 42 in. thick.
PO—Rogers, O.; SP—Same; CTY—Columbiana; RR—P. L. & W.
PR—Hugh Laughlin..East Palestine, O.
TR—A. P. Mullins.....Salem, O.
GM—A. P. Mullins, " "
GS—A. P. Mullins, " "
PA—A. P. Mullins, " "
S of H—2 Elec. loco.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, 240 H. P., 1 gen. unit, 250 volts D. C., 2 pumps.
EMP—75. Last fiscal year output, 10,000 tons. (On strike).

ELKINS COAL CO.
General Office, Bellaire, O.
Locust Mine, Drift, Pgh. No. 8 Seam, 3½ to 4½ ft. thick.
PO—Flushing, O.; SP—Same; CTY—Belmont; RR—C. L. & W.
PR—D. A. Elkins.....Bellaire, O.
TR—G. W. Dankwater, " "
GM—D. A. Elkin, " "
CE—D. A. Elkin, " "
PA—D. A. Elkin, " "
MS—Wm. D. Northover....Holloway, O.
S of H—1 Elec. loco., track gauge 36 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, total 200 H. P., 1 Gen. unit 250 volts D. C., Successors to the Buckeye Coal Co.

ELM ROCK COAL CO.
Elm Rock Mine, Drift, No. 6 Seam, 6 ft. thick.
PO—Nelsonville, O. SP—Same. CTY Athens. RR—Hocking Valley.
PR—B. Phillips .....Nelsonville, O.
GM—B. Phillips ..... " "
TR—M. Evans ..... " "
PA—A. Robinson ..... " "
MM—A. Robinson ..... " "
MS—W. F. Con ..... " "
EE—A. McCollum .....Doanville, O.
EM—F. R. Baker .....Athens, O.
SCO—Imperial Store Co. Buyer, J. G. Guy, Doanville, O.
S of H—Mules and 1 elec. loco. Track gauge 42 in.
S of M—3 elec. machines.
PP—2 water tube boilers, 1 gen. unit, 250 volts, 3 pumps.
EMP—110. Sales agent, General Hocking Fuel Co., Columbus, O.

EMMA COLLIERIES CO.
PO—Jackson; CTY—Jackson.
No report.

ESSEX COAL CO. (THE)
General Office, Columbus, Ohio.
PR—Calvin Essex .....Columbus, O.
TR—Fred Essex ..... " "
GM—Calvin Essex ..... " "
GS—Chas. S. Essex .... " "
PA—Calvin Essex ..... " "
CE—W. W. Knight, New Straitsville, "
MM—A. L. Switzer.. " "
EE—Wm. Chappelear . " "
Sales Mgr., Fred Essex, Columbus, O.

Esco Mine, Drift, No. 6 Seam, 6 to 10 ft. thick.
PO—New Straitsvile, O. SP—Same CTY—Perry. RR—H. V.
S of H—2 elec. loco. Track gauge 42 in.
S of M—6 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 2 gen units 250 volts D. C., 4 pumps.
EMP—135. Last fiscal year output 100,000 tons.

South Esco Mine, Drift, No. 6 Seam, 7 to 8 ft. thick.
PO—New Straitsvile, O. SP—Same. CTY—Perry. RR—H. V.
S of H—2 elec. loco. Track gauge 42 in.
S of M—6 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 2 gen. units, 250 volts D. C.

Calvin Mine; Drift; Redstone Seam, 72 in. thick.
PO—Pomeroy, O.; SP—Calvin, O.; CTY—Meigs; RR—K. & M.
MS—Chas. S. Essex.....Pomeroy, O.
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—3 Elec. mach.
PP—4 Erie water tube boilers, total 600 H. P., 3 gen. units, 250 volts D. C., 1 pump.
EMP—96.
Last fiscal year output, 80,000 tons.

Statler Mine; Redstone Seam, 54 in. thick.
PO—Pomeroy, O.; SP—Statler, O.; CTY—Meigs; RR—K. & M.
MS—Chas. S. Essex.....Pomeroy, O.
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—3 Elec. mach.
PP—Power from Calvin Mine.
EMP—66. Last fiscal year output, 50,000 tons.

EVANS CLAY MFG. CO.
Drift Mine; No. 6 Seam, 34 in. thick.
PO—Uhrichsville, O.; SP—Same; CTY—Tuscarawas; RR—B. & O. and P. C. C. & St. L.
PR—T. J. Evans.....Uhrichsville, O.
TR—Eugene Evans, " "
MS—Walter McMillen, " "
S of H—Mules.
S of M—Hand.
EMP—25. Last fiscal year output, 200 tons.

EVANS, T. J., COAL CO.
Evans Mine, Drift, No. 2 Jackson Seam.
PO—Coalton, O. SP—Same. CTY—Jackson. RR—C. H. & D.
GM—Ed. T. Evans.....Coalton, O.
GS—Ed. T. Evans..... " "
PA—Ed. T. Evans..... " "
MS—H. R. Kysor..... " "
SCO—T. J. Evans & Co. Buyer, E. L. Darling, Coalton, O.

Continued on Next Page.

S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—1 Gem City return tubular boiler
EMP—75.

EVERYBODY'S COAL CO.
Out of business.

FEDERAL CLAY PRODUCT CO.
American Mine, Drift, No. 5 Seam.
PO—Mineral City, O. RR—B. & O.
PR—Geo. J. Markley..Mineral City, O.
TR—Geo. J. Markley, " "
GM—Geo. J. Markley, " "
PA—Geo. J. Markley, " "
EM—Geo. Zenner, " "
MS—F. Harris, " "
SCO—Markley Big Store Co., Mineral City, O.
S of H—Mules.
S of M—Hand.
PP—3 boilers, total 260 H. P. gen. unit, 220 volts D. C.
Sales agent, J. Ira Dary, Mineral City, O.

FISHACK GYPSUM CO.
Now American Cement Plaster Co.

FISHER, F. H.
Fisher Mine, Slope, No. 6 Seam.
PO—Zanesville, O. CTY—Muskingum.
PR—F. H. Fisher.....Zanesville, O.
MS—F. H. Fisher, " "
S of H—Mules.

FLUSHING COAL CO. (THE)
General Office, Elyria, Ohio.
Tunnel Mine, Drift, No. 8 Seam, 4 ft. 3 in. to 3 ft. thick.
PO—Flushing, O. SP—Same. CTY—Belmont. RR—B. & O.
PR—T. S. Faxon.....Elyria, O.
TR—T. S. Faxon..... " "
GM—T. S. Faxon..... " "
PA—T. S. Faxon..... " "
GS—Geo. Milwind .....Flushing, O.
EE—V. Ellis ..... " "
EM—R. P. Millard .....Cleveland, O.
S of H—Mules, 2 elec. loco. Track gauge 36 in.
S of M—1 elec. machine, 6 compressed air machine.
PP—2 return tubular Erie boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 5 pumps, 1 air comp.
EMP—72. Annual output 51,826 tons. Sales agent, T. S. Faxon, Elyria, Ohio.

FORSYTHE COAL CO. (THE)
General Office, Cambridge, Ohio.
Forsythe Mine, Slope, Cambridge No. 7 Seam, 4½ to 6 ft. thick.
PO—Cambridge, R. D. No. 8. SP—Mineral Siding, O. CTY—Guernsey. RR—Main line B. & O.
PR—H. J. Forsythe ....Cambridge, O.
TR—H. A. Forsythe .... " "
GM—H. A. Forsythe .... " "
PA—H. A. Forsythe .... " "
GS—Wm. Sheehan ..... " "
EM—John W. Stewart....Cambridge, O.
MM—Paul Spaid, " "
EE—Ross Mitchell, " "
MS—W. A. Alderman, " "
SM—H. J. Forsythe .... " "
S of H—Mules and 4 elec. loco. Track gauge 36 in.
S of M—8 elec. machines.
PP—4 return tubular boilers, total 500 H. P., 3 gen. units 250 volts D. C., 4 pumps.
EMP—285. Last fiscal year output 198,000 tons.

FORT PITT COAL CO.
General Office 1108 House Bldg., Pittsburgh, Pa.
Clifford Mine, Slope, Pittsburgh Seam No. 8, 5 ft. 8 in. to 6 ft. 3 in. thick.
PO—Moundsville, W. Va. SP—Dillie Station, Ohio. RR—P. O. V. & C.
PR—A. R. Budd .....Pittsburgh, Pa.
TR—C. M. Budd .... " "
EM—Baton & Co..... " "
CE—Baton & Co..... " "
GS—Bert Beatty....Moundsville, W.Va.
SCO—Acme Store Co. Buyer, S. A. Barnum, California, Pa.
S of H—5 elec. loco. Track gauge 42 in.
S of M— 7 elec. machines.
PP—4 return tubular boilers, total 600 H. P., 2 gen. units, one 250 volts, one 150 volts, 3 pumps.
EMP—300. Annual output 300,000 tons. Sales agent, A. J. Gosser, 1108 House Bldg., Pittsburgh, Pa.

FRANKLIN COAL CO.
Franklin Mine, Drift, No. 8 or Pittsburgh Seam, 5 ft. 8 in. thick.
PO—Stewartsville, O. SP—Same. CTY—Belmont. RR—B. & O.
PR—George A. Euss ....Cleveland, O.
TR—G. J. Chalfant....Pittsburgh, Pa.
GM—Charlton Dixon...Stewartsville, O.
GS—Charlton Dixon... " "
PA—Charlton Dixon... " "
EE—Richard Kidd ... " "
EM—G. Christy ..Wheeling, W. Va.
S of H—2 elec. loco. Track gauge 34 in.
S of M—4 elec. machines.
PP—Buy power from Wheeling Elec. Co.
EMP—110. Last fiscal year output 36,790 tons. Sales agents, Kendall Mining Co., Cleveland, O.

FRIEL, T. J., COAL CO.
Slope Mine; Seam, 108 in. thick.
PO—New Straitsville, O.; SP—Same; CTY—Perry; RR—Hocking Valley.
S of H—Mules.
S of M—Hand.
EMP—3. Purchase power.

GEIL COAL CO.
General Office, Ironton, O.
Drift Mine; Seam, 36 to 48 in. thick.
PO—Ironton, O.; SP—Same; CTY—Lawrence.
PR—Andrew Geil.....Ironton, O.
S of M—Hand.
Local Mine.

GEM COAL CO (THE)
Gem Mine, Drift, No. 6 Seam, 12 to 6 ft. thick.
PO—Nelsonville, O. SP—Greendale. CTY—Hocking. RR—H. V.
PR—A. D. Knight.....Nelsonville, O.
TR—O. L. Aumiller.... " "
PA—O. L. Aumiller.... " "
GM—A. D. Knight.... " "
GS—A. D. Knight.... " "
S of H—Horses, 1 elec. loco. Track gauge 42 in.
S of M—3 elec. machines.
PP—2 return tubular boilers, 2 gen. units, 250 volts D. C., 2 pumps.
EMP—90. Annual output 100,000 tons.

GILHOOLY, P. F., COAL CO.
Drift Mine; Rib Seam, 60 to 72 in. thick.
PO—Bellaire, O.; SP—Same; CTY—Belmont.
PR—P. F. Gilhooly.....Bellaire, O.
TR—P. F. Gilhooly, " "
GM—P. F. Gilhooly, " "
PA—P. F. Gilhooly, " "
MS—Jas. B. Hall, " "
EM—A. J. Harbaugh, " "
S of H—Mules.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—11

GINN COMPANY, THE
General Office, Ironton, O.
Red Devil Mine; Drift; No. 5 Sheridan Seam.
PO—R. F. D. No. 2, Ironton, O.; SP—La Grange, O.; CTY—Lawrence; RR—D. T. & I.
PR—C. S. Ginn.....Ironton, O.
TR—Frank L. Biggs, " "
GM—Frank L. Biggs, " "
PA—Frank L. Biggs, " "
MS—Leonard Schwab, " "
CE—Jas. T. Egerton, " "
SCO—La Grange Merc. Co., " "
S of H—1 Elec. loco. and mules.
S of M—Hand.
EMP—50.

GLEN ROY COAL CO. (THE)
Glen Roy Mine, Slope, Jackson Hill No. 2 Seam, 34 in. thick.
PO—Jackson, O. SP—Coalton, O. CTY—Jackson. RR—Hocking Valley.
PR—Henry Pritchard ....Glen Roy, O.
GS—Henry Pritchard ..... " "
MS—Geo. Richards ..... " "
TR—E. O. Roberts. " "
GM—O. S. Roberts .....Jackson, O.
PA—O. S. Roberts..... " "
S of H—Mules and elec. hoist.
S of M—3 elec. machines.
PP—Power purchased.
EMP—45. Last fiscal year output, 559,909 tons.

GLEN'S RUN COAL CO.
General Office, Cleveland, O.
GM—C. E. Maurer.....Cleveland, O.
PA—C. E. Maurer..... " "

Edgar Nos. 1, 2 and 3 mines, Drifts, Pgh. No. 8 Seam, 4 ft. 8 in. to 5 ft. thick.
PO—Dillonvale, O. SP—Same. CTY—Jefferson. RR—W. & L. E.
MS—C. W. Maurer.....Dillonvale, O.
S of H—5 elec. loco. and mules. Track gauge 42 in.
S of M—14 elec. mach.
PP—5 return tubular boilers, 2 gen. units, 250 volts D. C.
EMP—350.

Rush Run Nos. 2 and 3 Mines, Drifts, Pgh. No. 8 Seam; 54 to 70 in. thick
PO—Rush Run, O. SP—Same. CTY—Jefferson. RR—P. R. R.
MS—A. C. E. Roberts ..Rush Run, O.
S of H—5 elec. loco.
S of M—12 elec. machines.
PP—4 return tubular boilers.
EMP—280.

GLOBE COAL CO, THE
Consol Mine No. 513; Drift; No. 6 Seam, 72 to 96 in. thick.
PO—Murray, O.; SP—Same; CTY—Hocking; RR—H. V.
PR—E. W. Davis.....Murray, O.
GS—E. W. Davis, " "
TR—Vance Webb, " "
S of H—Horses.
S of M—1 Elec. mach.
PP—Gen. unit, 250 volts A. C., 1 pump.
EMP—28.

GLOBE IRON CO.
Globe Mine; Shaft; No. 1 Seam 42 to 54 in. thick.
PO—Jackson, O. SP—Same. CTY—Jackson. RR—B. & O. S. W.
PR—Eben Jones.....Jackson, O.
TR—John E. Jones, " "
GM—John E. Jones.....Jackson, O.
GS—John E. Jones, " "
PA—Morris Wheldon .... " "
EM—A. E. Campbell .... " "
MM—Albert Dobbins, " "
EE—M. Shaward, " "
MS—R. Lewis ..... " "
SCO—Globe Store, " "
S of H—Elec. loco. and mules.
S of M—3 Elec. mach.
PP—2 boilers, 300 H. P., 1 gen. unit, 250 volts D. C.
EMP—58. Last fiscal year output, 38,500 tons.

GORDON COAL MINING CO.
Now J. F. Johnson & Co.

GOSHEN COAL CO. (THE)
Seven mines in Ohio.
PR—C. L. Cassingham..Cleveland, O.
TR—W. S. Hayden ..... " "
Asst TR—P. R. Burnett... " "
SEC—P. R. Burnett ..... " "
GM—C. L. Cassingham... " "
GS—E. Ankney..New Philadelphia, O.
PA—Miss A. I. Lane.. " "
EM—C. R. Thrapp, " "
Sales Mgr., J. W. Canavan, Cleveland, Ohio.

"C" Mine, Drift, No. 6 Seam, 4 to 5 ft. thick.
PO—New Philadelphia, O. SP—Roswell, O. CTY—Tuscarawas. RR—C. & P. Div. Penna R. R., Tuscarawas Branch.
S of H—4 elec. loco. Track gauge 39 in.
S of M—Pick and 6 elec. machines.
PP—3 return tubular boilers, 2 gen. units, 250 volts D. C.
EMP—150.

"F" Mine, Drift, No. 6 Seam, 3 ft. 8 in. to 5 ft. thick.
PO—New Philadelphia, O. SP—Joyce, O. CTY—Tuscarawas. RR—C. & M. Div., Penna R. R.
S of H—1 leec. loco. Track gauge 39 in.
S of M—Pick and 4 elec. mach.
PP—2 return tubular boilers, 1 gen. unit, 250 volts D. C.

"G" Mine, Drift, No. 6 Seam, 4½ to 5 ft. thick.
PO—New Philadelphia, O. SP—Roswell, O. CTY—Tuscarawas. RR—C. & P. Div., P. R. R. Tuscarawas Branch.
S of H—Rope. Track gauge 39 in.
S of M—Pick.
PP—2 return tubular boilers, 1 gen. unit, 500 volts D. C.
All other mines idle.

GOSHEN CENTRAL COAL CO. (THE)
General Office, Massillon, Ohio.
Goshen Central Mine, Drift, No. 6 Seam.
PO—New Philadelphia, O. CTY—Tuscarawas. RR—Beaver Dam Branch, C. & P. Div., Penna lines.
PR—E. E. Fox .....Massillon, O.
GM—E. E. Fox ..... " "
TR—J. M. Seese ..... " "
GS—W. K. Moore..New Philadelphia, O.
EE—Clifford Moore, " "
S of H—3 elec. loco. Gauge 42 in.
S of M—2 elec. machines.
PP—4 return tubular boilers.

GOSHEN VALLEY MINES.
Nos. 4, 5 and 6 Mines; Drifts; No. 6 Seam, 54 to 60 in. thick.
PO—Beidler, O.; SP—Midvale, O.; CTY—Tuscarawas; RR—B. & O., Wainwright and Goshen Valley Br.
PR—Herman C. Schneider, New Philadelphia, O.
TR—Herman C. Schneider, New Philadelphia, O.
GM—Herman C. Schneider, New Philadelphia, O.
PA—Herman C. Schneider, New Philadelphia, O.
MS—Albert Schneider.....Beidler, O.
S of H—Mules.
S of M—Hand.
EMP—125. Last fiscal year output, 50,000 tons.
Formerly the Goshen Valley Coal Co.

GOSLINE, W. A., & CO.
General Office, Toledo, Ohio.
Bear Run Mine, Shaft, No. 6 Seam, 3½ ft. thick.
PO—New Lexington, SP—Corton, O. CTY—Perry. RR—C. A. & C.
PR—W. A. Gosline, Jr.....Toledo, O.
GM—W. A. Gosline, Jr..... " "
PA—W. A. Gosline, Jr..... " "
GS—E. W. Lewis..New Lexington, O.
S of H—1 elec. loco.
S of M—8 elec. machines.
PP—2 water tube boilers, total 300 H. P., 175 K. W., 2 pumps.
EMP—125.

GREAT NORTHERN SEWER PIPE CO. (The)
Great Northern Mine; Shaft.
PO—Empire, O.; CTY—Jefferson; RR—C. & P.
GM—C. M. Stratton.....Empire, O.

GREER-BEATTY CLAY CO. (THE)
Greer-Beatty Mine, Drift, No. 5 Seam, 3 ft. 8 in. thick.
PO—Magnolia, O. SP—Same. RR—Penna Co.
PR—W. H. Greer.....Magnolia, O.
TR—R. E. Greer ..... " "
MS—Joseph Degenhard ... " "
S of H—Mules.
S of M—Hand.
EMP—10. Annual output 10,525 tons.

GRANGER COAL CO.
See the Pan-American Coal Co.

GUERNSEY COAL AND MNG. CO.
See the Pan-American Coal Co.

HALLEY COAL CO. (THE)
Nos. 2, 3 and 5 Mines; Drift, No. 5 Seam, 42 in. thick.
PO—Pedro, O.; SP—Etna Station, O.; CTY—Lawrence; RR—D. T. & I.
PR—D. D. Davis.....Oak Hill, O.
TR—F. W. Allard.....Pedro, O.
GM—F. W. Allard, " "
PA—F. W. Allard, " "
MS—George Woods, " "
MM—H. S. Arnett, " "
EE—H. S. Arnett, " "
SM—John S. Thomas, " "
EM—Fred Leet.....Ironton, O.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 Pump.
EMP—125. Last fiscal year output 300,000 tons.
Sales Agent, F. W. Allard, Pedo, O.

HAMBLETON BROS.
Hambleton Mine; Dift, No. 1 Seam, 36 to 48 in. thick.
PO—Wadsworth, O.; SP— Same; CTY—Medina.
TR—George Hambleton....Wadsworth, O.
GM—George Hambleon, " "
PA—George Hambleon, " "
MS—T. Hambleton, " "
S of H—Mules.
S of M—Hand.
EMP—7. Last sfical year output 3,312 tons.
Sales Agent, George Hambleton, Wadsworth, O.

HANGING ROCK IRON CO.
New Castle Mine, Drift, No. 5 Seam.
PO—Hanging Rock, O. SP—Royersville, Ohio, and Hanging Rock, Ohio. CTY—Lawrence. RR — Royersville, O., on D. T. & I. Ry and Hanging Rock, O., on N. & W. Ry. Both connect with mine by tram road.
PR—I. R. Meacham....Cincinnati, O.
TR—J. R. Houston.... " "
GM—J. K. Pollock .... " "
GS—W. M. Jeffreys..Hanging Rock, O.
PA—W. M. Jeffreys.. " "
CE—F. G. Leete .....Ironton, O.
MS—Wm. Dickens ..Hanging Rock, O.
SCO—Pine Grove Store. Buyer, W. J. Brown, Hanging Rock, O.
S of H—Mules.
S of M—Hand.

HANNA-ESSEX COAL CO. (THE)
General Office, New Straitsville, O.
Essex Mine; Slope; No. 6 Seam, 72 in. thick.
PO—Hemlock, O.; SP—Carrington, O.; RR—N. Y. C., Z. & W. Div.
PR—H. H. Essex..New Straitsville, O.
GS—H. H. Essex, " "
TR—N. S. Essex, " "
PA—N. S. Essex, " "
MS—Eugene Essex.....Hemlock, O
EM—P. S. Sniffen.....Nelsonville, O.
EE—Newton Cooke..... Congo, O.
S of H—1 Elec. loco.; track gauge, 41 in.
S of M—2 Elec. mach.
PP—1 Boiler, 1 pump.
EMP—100.
Output, 500 tons daily capacity.
Sales Agency, Geo. M. Jones Co., Toledo, O.

HARBISON-WALKER REFRACTORIES CO.
General Office, Pittsburg, Pa.
One Mine in Ohio, 2 Mines in Penna., 1 in Kentucky.
Continued on Next Page.

HARBISON-WALKER REFRACTORIES CO.—Continued.
PO—Scioto Furnace, O.; RR—B. & O., S. W.; CTY—Scioto.
PR—H. W. Croft.....Pittsburg, Pa.
TR—Wm. Walker, " "
PA—C. T. Stewart, " "
Mine coal for their own use.

HARPER COAL CO.
Harper Mine; Slope; Seam 30 to 48 in. thick.
PO—Coalton, O. SP—Davisville, O. CTY—Jackson. RR—D. T. & I.
PR—J. E. Harper .....Coalton, O.
GM—J. E. Harper ..... " "
PA—J. E. Harper ..... " "
TR—G. E. Christman... " "
MS—J. C. Rowe..... " "
S of H—Mules and rope.
S of M—Hand.
PP—1 Return tubular boiler, 100 H. P. 1 gen. unit and 3 pumps.
EMP—30. Last fiscal year output, 12,000 tons.

HAYES COAL CO
GM—John E. Hayes.....Chapman, O
GS—John E. Hayes, " "
PA—G. C. Callahan, " "
SCO—Chapman Store, Buyer, G. C. Callahan, Chapman, O.

Springfield Mine, Shaft, No. 2 Seam, 30 to 33 in. thick.
PO—Chapman, O.; SP—Same; CTY—Jackson; RR—Detroit, Toledo & Ironton and Hocking Valley.
S of H—Mules; track gauge 38 in.
S of M—Mine work all drawing pillars now.
PP—4 Return tubular boilers, total 300 H. P., 4 pumps, 1 gen. unit, 250 volts.
EMP—40 Annual output 10,000 tons.

Grace Mine, Shaft, No. 2 Seam, 34 in. thick.
PO—Chapman, O.; SP—Same; CTY—Jackson.
SM—T. W. Roderick,.... Chapman, O.
S of H—Mules, 2 elec. loco., track gauge 42 in.
S of M—4 Elec. machines.
PP—3 Return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts, 5 pumps.
EMP—90. Annual output 15,000 tons.

Chapman Mine, Drift, No. 2 Seam, 32 to 36 in. thick.
PO—Chapman, O.; SP—Same; CTY—Jackson; RR—D. T. & I.
S of H—Mules; track gauge 36 in.
S of M—Pick.
PP—2 boilers each 100 H. P., 2 pumps.
EMP—34. Annual output 4,000 tons.

HEAD, F. L. COAL CO.
General Office, Girard, O.
Ideal Mine, Drift, Pittsburgh No. 8 Seam, 6 ft. thick.
PO—Fairpoint, O. SP—Same. CTY—Belmont. RR—B. & O.
PR—F. L. Head.....Girard, O.
TR—F. L. Head .... " "
GM—F. L. Head..... " "
PA—F. L. Head..... " "
GS—W. J. Bertram.....Fairpoint, O.
S of H—1 elec. loco. Track gauge 42 in.
S of M—3 elec. machines.
PP—100 K. W., 250 volts D. C.
EMP—100. Annual output 55,000 tons.

HEINZER & RADLE.
Massillon City Mine, Shaft, No. 1 Seam, 3½ ft. thick.
PO—Massillon, O. SP—Same| CTY—Stark.
PR—J. M. Heinzer, Massillon, O., R. F. D. 1.
MS—J. M. Heinzer, Massillon, O., R. F. D. 1.
S of H—Mules.
S of M—Pick mining.
PP—2 Russell & Co. return tubular boilers, 60 H. P., 1 pump.
EMP—13.

HISYLVANIA COAL CO. (THE)
General Office, Columbus, O.
Hisylvania Mine; Slope; No. 6 Seam 60 in. thick.
PO—Trimble, O. SP—Same. CTY—Athens; RR—K. & M.
PR—J. W. Blower .....Columbus, O.
TR—J. W. Blower ..... " "
GM—J. W. Blower.....Columbus, O.
PA—E. B. Graham, " "
GS—E. M. Blower.....Trimble, O.
MS—Charles Jonas.....Glouster, O.
EM—F. R. Baker .....Athens, O.
MM—C. F. Jones .....Glouster, O.
S of H—Rope, Mules and 3 elec. loco. Track gauge 42 in.
S of M—8 electric machines
PP—6 return tubular boilers, 250 volts D. C., and 5 pumps.
Sales agent, E. B. Graham, Columbus, O.
EMP—300

HOBSON COAL CO.
Black Cat Mine; Drift No. 8 "A" Seam; 54 to 72 in. thick.
PO—Rutland, O.; SP—Middlesport, O. CTY—Meigs; RR—K. & M.
PR—W. E. Williams.....Rutland, O.
GM—W. E. Williams, " "
PA—W. E. Williams, " "
TR—B. S. Williams, " "
EM—A. Sheldon, " "
MS—J. C. Trew, " "
S of H—Mules; track gauge 38½ in.
S of M—1 Jeffrey Elec. mach.
PP—1 Pump.
EMP—38. Last fiscal year output, 15,000 tons.

HOCKING BLOCK COAL CO.
General Office, Columbus, O.
Central Mine; Drift; No. 6 Seam.
PO—New Straitsville, O.; SP—Same; CTY—Perry; RR—Hocking Valley.
PR—D. N. Postlewaite....Columbus, O.
TR—C. Cohenour, " "
GM—C. Cohenour, " "
PA—C. Cohenour, " "
GS—T. J. McLeish..New Straitsville, O.
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—Elec. mach.
PP—150. K. W. Motor Gen, Set on purchased power, 250 volts D. C., 2 pumps.

HOCKING DOMESTIC COAL CO
General Office, Nelsonville, Ohio.
PR—J. M. Lama .....Nelsonville, O.
TR—E. R. Lama ..... " "
PA—E. R. Lama..... " "
GM—J. M. Lama..... " "
SCO—J. M. Lama..... " "

Domestic No. 5 "Redbird," Drift, Pomeroy Seam, 4 to 5 ft thick.
PO—Cheshire, O., R. D. SP—Middleport, O. CTY—Meigs. RR—Hocking Valley.
MS—Thomas Matheny..Middleport, O.
S of H—1 elec. loco. Track gauge 39 in.
S of M—Elec. machines.
PP—1 return tubular boiler, 1 gen. unit, 250 volts D. C.
EMP—80.

Domestic No. 6, Drift, No. 6 Seam, 8 to 5½ ft. thick.
PO—Nelsonville, O. SP—Floodwood, O. CTY—Athens. RR—Hocking Valley.
MS—Clint Boles .....Nelsonville, O.
SM—Geo. Wraith ..... " "
S of H—1 elec. loco. Track gauge 42 in.
S of M—3 elec. machines.
PP—2 pumps, 1 water tube Heine boiler, 1 gen. unit, 250 volts D. C.
EMP—35. Last fiscal year output, for both mines, 29,000 tons.

HOCKING MINING CO. (THE)
General Office, Athens Ohio.
Del Carbo Mine, Slope, No. 6 Seam, 4½ ft. thick.
PO—Carbondale. O. SP—Mineral. O. CTY—Athens. RR—B. & O. S. W.
PR—C. D. Hopkins.....Athens, O.
TR—C. D. Hopkins..... " "
GM—C. D. Hopkins..... " "
PA—C. D. Hopkins.....Athens, O.
EM—Arthur Anderson ..... " "
GS—G. W. Arnold....Carbondale, O.
EE—John Hanula.....Carbondale, O.
SM—F. C. Betts ..... " "
S of H—Mules and 4 elec. loco. Track gauge 42 in.
S of M—8 elec. machines.
PP—3 Atlas return tubular boilers, total 450 H. P., 250 volts D. C., 4 pumps.
EMP—175.

HOCKING VALLEY FIRE CLAY CO.
Hocking Valley Clay Mine, Drift, No. 5 Seam, 8 ft. thick.
PO—Nelsonville, O. CTY—Athens.
MS—Chas. Ray.....Nelsonville, O.
S of H—Horses.
EMP—12.
State report.

HOCKING VALLEY PRODUCTS CO.
General Office, Harrison Bldg., Columbus, Ohio.
PR—D. E. Reagan .....Columbus, O.
TR—E. B. Francis ..... " "
PA—E. B. Francis ..... " "
SECY—F. J. Shaffer ..... " "
GS—W. J. Barry..New Straitsville, O.
EM—W. J. Barry, " "
EE—Fred Felt .....Greendale, O.
GS—(Clay Product Plants) Wm. Drayton, Greendale, O.
SCO—Ohio Trading Co....Columbus, O.
Sales Mgr. (Coal) A. P. DeVennish, Columbus, O.

Nos. 1 and 1a Mines, Drift and Slope, 6 and 7 Seams.
PO—Doanville, O. SP—Same. CTY—Athens. RR—H. V.
S of H—Elec. loco. and rope.
S of M—Elec. mach.
PP—4 boilers, gen. units, D. C.
EMP—500.

No. 3 Mine, Drift, No. 6 Seam.
PO—Shawnee, O. SP—Same. CTY—Perry. RR—B. & O.
S of H—Rope.
S of M—Elec. mach.
PP—4 boilers, gen. unit D. C.,
EMP—100.

Central and Gem Mines, Drift, No. 6 Seam.
PO—New Straitsville, O. SP—Same. CTY—Perry. RR—H. V.
S of H—Elec. loco.
S of M—Elec. mach.
PP—8 boilers, gen. units D. C.
EMP—750.

Nos. 21 and 23 Mines, Drifts, No. 6 Seam.
PO—Buchtel, O. SP—Same. CTY—Athens. RR—H. V.
S of H—Elec. loco.
S of M—Elec. mach.
PP—4 boilers.
EMP—200.

Nos. 9, 35, 37, 49 and 51 Mines, Drifts, No. 6 Seam.
PO—New Straitsville, O. SP—Same. CTY—Perry. RR—H. V.
S of H—Horses.
S of M—Hand.
EMP—90.

Nos. 53, 31 Mines, Drifts. No. 6 Seam.
PO—Buchtel, O. SP—Same. CTY—Athens. RR—H. V.
S of H—Horses.
S of M—Hand.
EMP—30.

Nos. 107, 109, 111 Mines, Drifts, No. 6 Seam.
PO—New Straitsville, O. SP—Same. CTY—Perry. RR—H. V.
S of H—Horses.
S of M—Elec. mach.
EMP—45.

No. 105 Mine, Drift, No. 6 Seam.
PO—New Straitsville, O. SP—Sand Run, O. RR—H. V.
S of H—Horses.
S of M—Elec. mach.
PP—Gen. units D. C.
EMP—30.

No. 29 Mine, Drift, No. 6 Seam.
PO—Murray, O. SP—Same. CTY—Hocking. RR—H. V.
S of H—Horses.
S of M—Hand.
EMP—10.

HOLDEN CLAY PRODUCTS CO.
South Side Mine.
PO—Mineral City, O.; SP—Same; CTY—Tuscarawas; RR—B. & O.
GM—Geo. J. Markley, Mineral City, O.
PA—Geo. J. Markley, " " "

HORGER-HELDT COAL COMPANY
General Office, New Philadelphia, O.
H. and G. Mines; Drift; No. 6 Seam 4½ ft. thick. (G. Mine formerly operated by Goshen Coal Co.)
PO—Roswell, O.; SP—Same; CTY—Tuscarawas; RR—Penn., C. & P. Div.
PR—J. U. Horger, New Philadelphia, O.
GM—J. U. Horger, " " "
MS—J. U. Horger, " " "
MM—J. U. Horger, " " "
PA—N. C. Parr, " " "
CE—Geo. Arnold, " " "
EM—Geo. Arnold, " " "
Asst Tr—Chas. Heldt, New Philadelphia, O
EE—B. Borden, " "
SM—J. C. Thomas, " "
S of H—Mules and rope; track gauge 39 in.
S of M—Hand and 4 Elec. mach.
PP—2 Boilers, total 250 H.P., 1 Gen. unit, 250 volts D. C., 1 pump.
G—from Central Power Station.
H—from Goshen Coal Co., "C" Mine.
EMP—150. Last fiscal year output, 51,000.29 tons.
Sales Agency, W. Va. & O. Coal & Coke Co., Cleveland, O.

HUTCHINSON COAL CO.
General Office, Fairmont, W. Va.
8 Mines in West Virginia, 1 Mine in Ohio.
Kirkwood Mine, Drift, Pittsburgh No. 8 Seam, 4½ to 5½ ft. thick.
PO—Bridgeport, O. SP—Same. CTY—Belmont; RR—B. & O.
PR—M. L. Hutchinson, Fairmont, W.Va.
TR—C. H. Jenkins ... " "
GM—C. H. Jenkins ... " "
GS—C. J. Ryan ..... " "
PA—M. C. Lough, " "
MS—William Heller....Bridgeport, O.
S of H—1 Elec. loco., track gauge 42 in.
S of M—7 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 250 volts D. C., 2 Pumps.
EMP—172. Last fiscal year output, 54,679 tons. Mine idle about 9 months on account of strike.

HUTSON COAL CO. (THE)
General Office, Cleveland, O.
PR—H. D. Marble .... Cleveland, O.
TR—H. D. Marble, " "
GM—H. D. Marble, " "
PA—H. D. Marble, " "
GS—T. J. Williams,....Deerfield, O.
EM—H. D. Lewis.....Hopedale, O.

Deerfield No. 4, Shaft, No. 1 Seam, 3 ft. 9 in. thick, operate washery.
PO—Deerfield, O., SP—Same, CTY—Portage; RR—N. Y. C. Alliance Div.
MS—T. J. Williams.....Deerfield, O.
S of H—Mules and 1 storage battery, loco., track gauge 37 in.
S of M—Pick and 5 elec. mach.
PP—4 Erie return tubular boilers, 4 pumps.
EMP—115. Last fiscal year output, 43,844 tons.

Custer Mine; Drift; No. 8 Seam; 56 in. thick.
PO—Hopedale, O., SP—Same, CTY—Harrison. RR—W. P. T. Ry.
MS—H. D. Lewis.....Hopedale, O.
S of H—Mules, track gauge 37 in.
S of M—Pick, and 1 elec. mach.
PP—1 Erie return tubular boiler, 1 pump.
EMP—15. Last fiscal year output, 5570 tons.

IMPERIAL MINING CO.
See Middle States Coal Corporation.

INDIAN HILL COAL CO. (THE)
Indian Hill Mine, Drift, 4 to 4 ft. 8 in. thick.
PO—Uhrichsville, O. SP—Same. CTY—Tuscarawas; RR—Penna. R. R.
PR—H. P. Arnt.....Cleveland, O.
TR—A. W. Dean, " "
GM—P. Townsend, " "
PA—A. J. Wiegand, " "
EE—Clyde Scott, " "
CE—R. P. Millard,.....Cleveland, O.
MS—H. S. Williams....Uhrichsville, O.
S of H—Mules and 2 elec. loco., track gauge 35 in.
S of M—4 Elec. mach.
PP—1 McGregor return tubular boiler, 150 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—90. Last fiscal year output, 35,000 tons. Sales Agents, Pittsburgh & Ohio Mining Co., Cleveland, O.

INGHAM BROS.
Ingham Mine; Drift; No. 6 Seam, 34 to 56 in. thick.
PO—Coshocton, O.; SP—Same; CTY—Coshocton; RR—W. & L. E.
GS—John Ingham.....Coshocton, O
S of H—Mules.
S of M—Hand.
EMP—40. Last fiscal year output, 18,000 tons.

JACKSON COAL CO.
Thomas and Davis Mines; Drift; Nos. 4 and 5 Seams, 36 to 55 in. thick.
PO—Oak Hill, O.; SP—Same; CTY—Jackson; RR—B. & O.
PR—A. E. Howell.....Oak Hill, O
TR—A. E. Howell, " "
GM—A. E. Howell, " "
PA—A. E. Howell, " "
MS—Murley Bates, " "
S of H—Mules.
S of M—Hand.
PP—1 Pump.
EMP—20. Last fiscal year output, 17,000 tson.

JACKSON IRON & STEEL CO., (THE)
Jisco Mine, Shaft, Wellston No. 1 Seam, 2 to 3 ft. thick.
PO—Jackson, O., SP—Same, CTY—Jackson; RR—D. T. & I.; B. & O. S. W.
PR—Simon Labold.....Jackson, O.
TR—J. F. Morgan, " "
GM—J. F. Morgan, " "
PA—J. F. Morgan, " "
MS—Dave Ridge, " "
MM—Roy Brunner, " "
SM—Maurice Smith, " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, 2 Pumps.
EMP—50. Last fiscal year output 7, 697 tons. Out put used in blast furnace.

JACKSON MINING CO.
Now the Maynard Coal Co.

JACKSON & WEST VIRGINIA FUEL CO.
General Office, Dayton, O.
McKitterick Mine, Drift; Jackson Seam; 3½ ft. thick.
PO—Oak Hill, O., R. F. D. No. 1, SP—McKitterick, O.; CTY—Jackson; RR—C. H. & D.

Continued on Next Page.

PR—V. E. Hall.....Dayton, O.
GM—V. E. Hall, " "
TR—Frank J. Hall, " "
PA—Frank J. Hall, " "
GS—E. E. Brobard,....Oak Hill, O.
SM—E. M. Flowers, " "
CE—Fred Leete.....Ironton, O.
ME—A. E. Campbell.....Jackson, O.
S of H—Mules.
S of M—Hand.
EMP 90. Last fiscal year output, 50,000 tons.

JAMES BROS. COAL CO.
James Mine; Drift; Middle Kittanning Seam, 46 to 48 in. thick.
PO—Magnolia, O.; SP—Sandyville, O.; CTY—Carroll and Stark; RR—B. & O., Huff Run Branch.
PR—Daniel James, ...Magnolia, O.
GM—H. A. Jepson, " "
GS—H. A. Jepson, " "
PA—H. A. Jepson, " "
MS—H. A. Jepson, " "
MM—Lewis James, " "
TR—Richard James, ...Alliance, O.
CE—Wm. Hibbs, ...Scio, O.
S of H—Mules (at present).
S of M—2 Elec. mach. and hand.
PP—1 Return tubular boiler, 75 H. P., gen. units, 250 volts D. C.
EMP—16. Last fiscal year output, 7,000 tons.
Sales Agency, Vankirk Coal Co., Mineral City, O.; and Bixler C. & C. Co., Pittsburgh, Pa.

JAMES & CO.
Garrett Mine; Drift, No. 6 Seam, 96 to 120 in. thick.
PO—Shawnee, O.; SP—Same; CTY—Perry; RR—B. & O.
MS—Wm. R. James.....Shawnee, O.
S of H—Mules.
S of M—Hand.
EMP—4 to 5.

JEFFERSON COAL CO.
General Office, Cleveland, O.
PR—John E. Newell....Cleveland, O.
TR—John E. Newell, " "
GM—John Simpson.....Bellaire, O.
PA—Robt. I. Simpson.....Cleveland, O.
EM—J. B. Headley....Piney Fork, O.
MM—Alex. Datrick and E. K. Heckle, Piney Fork, O., and Thomas Griffith, Harperville, O.
SCO—Piney Fork Supply Co., Piney Fork, O., and Harperville Supply Co., Harperville, O.
Sales Agency, The Company, Cleveland, O.

Piney Fork Nos. 1 and 2 Mines; Drifts; Pgh. No. 8 Seam; 55 to 64 in. thick.
PO—Piney Fork, O. SP—Same. CTY—Jefferson; RR—N. Y. Central, Alliance Div.
MS—Wm. Simpson.....Piney Fork, O.
SM—John Yothers ..... " "
S of H—4 Goodman elec. loco. and mules; track gauge 42 in.
S of M—16 Elec. mach and hand.
PP—6 Return tubular boilers, total 750 H. P., 3 gen. units, 250 volts, D. C., 11 pumps.
EMP—483. Last fiscal year output, 137,571 tons.

Harpersville, Nos. 3 and 4 Mines; Drift; Pgh. Seam No. 8; 58 to 66 in. thick.
PO—Piney Fork, O. SP—Harperville, O. (Prepay); CTY—Jefferson; RR—L. N. Y. Central, Alliance Div.
MS—Wm. Simpson.....Piney Fork, O.
SM—S. C. Longbon....Harperville, O.
S of H—2 Goodman elec. loco., and mules; track gauge 42 in.
S of M—9 Elec. mach. and hand.
PP—4 Return tubular boilers, 2 gen. units 250 volts D. C., 4 pumps.
EMP—288. Last fiscal year output, 60,530 tons.

JENKINS, D. C., & CO.
XX Mine; Drift; No. 6 Seam, 84 to 108 in. thick.
PO—Shawnee, O.; SP—Same; CTY—Perry; RR—B. & O.
GS—D. C. Jenkins,.....Shawnee, O.
MS—W. K. Redfern, " "
EE—D. J. Lewis, " "
S of H—1 Elec. loco.; track gauge 42 in.
S of M—1 Elec. mach.
EMP—19. Output 14,000 tons.
Successors to the Shawnee Coal Co.

JOHNSON COAL CO.
Johnson Mine; Slope; Pittsburgh, No. 8 Seam; 5½ ft. to 6 ft. thick.
PO—Dilles Bottom, O.; SP—Johnson Sta. CTY—Belmont. RR—Penna, Powhattan Div.
PR—J. F. Johnson.....Bellaire, O.
TR—Wm. Dickens, " "
GM—J. F. Johnson, " "
PA—J. F. Johnson, " "
MS—Wm. Resmie....Dilles Bottom, O.
SM—W. W. Radabaugh, " "
S of H—Mules and 3 elec. locos.; track gauge 42 in.
S of M—6 Elec. mach.
PP—3 Return tubular boilers, total H. P. 350, 1 gen. unit, 250 volts A. C., 2 pumps.
EMP—205. Last fiscal year output, 189,258 tons.

JOHNSON, J. F., & CO.
PO Stewartsville, O.
Successors to Gordon Coal Mng. Co.
No report.

JONATHAN CREEK COAL CO., (THE)
General Office, 6119 Jackson St., Pittsburgh, Pa.
Jonathan Creek Mine, Drift, No. 6 Seam, 3 to 4 ft. thick.
PO—R.F.D. South Zanesville, O., SP—Buckeye, O., CTY—Muskingum RR—Z. & W., N. Y. C. Lines.
PR—Chas. F. Randolph. Pittsburgh, Pa.
TR—Chas. F. Randolph, " "
GM—Chas. F. Randolph, " "
PA—Chas. F. Randolph, " "
GS—Wm. J. Reid.....Zanesville, O.
S of H—Mules and elec. loco.
S of M—5 Elec. mach.
PP—1 Erie return tubular boiler, 150 H. P., 1 pump.
EMP—42. Last fiscal year output 26,000 tons.

JONES & ADAMS COAL CO. (THE)
Now part of Sunday Creek Coal Co.

JONES & MORGAN.
Out of business.

KAUL CLAY CO.
Seam 45 in. thick.
PO—Toronto, O.; SP—Same; CTY—Jefferson; RR—C. & P.
PR—H. E. Kilgus.....Toronto, O.
GM—H. E. Kilgus, " "
PA—H. E. Kilgus, " "
TR—I. T. Kaul, " "
MS—Austin Ferguson, " "
PP—6 Elec. water tube boilers.
EMP—350. Last fiscal year output, 25,000 tons.

KENNON COAL & MINING CO.
General Office, Cleveland, O.
Kennon Mine, Drift, No. 8 Pgh. Seam, 5 ft. 4 in. to 5 ft. 10 in. thick.
PO—Flushing, O.; SP—Same; CTY—Belmont; RR—B. & O.
PR—J. P. Burton.....Cleveland, O.
TR—Courtney Burton .... " "
PA—Courtney Burton .... " "
MS—Alexander Lindsay....Flushing, O.
S of H—1 Elec. loco., track gauge 36 in.
S of M—6 Elec. mach.
PP—2 Return tubular boilers, 250 volts D. C., 2 pumps.
EMP—135.

KILBOLTON COAL CO.
PO—Akron, O.
Seam, 48 to 144 in. thick.
No report.

KIRK-DUNN COAL CO., (THE)
Rhea Mine, Drift, No. 6 A Seam, 4 to 5¼ ft. thick.
PO—Salem, O., SP—West Point, O., CTY—Columbiana; RR—Y. & O., and Erie.
PR—F. M. Kirk .....Cleveland, O.
TR—F. M. Kirk, " "
PA—F. M. Kirk.....Cleveland, O.
GM—W. H. Dunn,.....Salem, O.
GS—W. H. Dunn, " "
EM—D. C. Barton.....Alliance, O.
EE—August Swansen.....Lisbon, O.
R. F. D. No. 6.
S of H—3 Elec. loco., track gauge 36 in.
S of M—6 Elec. mach.
PP—Buy power. 1 pump.
EMP—290. Last fiscal year output 210,000 tons.

KRAMER BROS.
Drift Mine; No. 6 Seam, 84 to 132 in. thick.
PO New Straitsville, O.; CTY—Perry; RR—H. V.
TR—F. E. Kramer..New Straitsville, O.
GM—J. P. Kramer, " " "
PA—J. P. Kramer, " " "
EM—J. P. Kramer, " " "
MS—J. P. Kramer, " " "
S of H—Rope and mules.
S of M—Hand.
EMP—14.

LA BELLE IRON WORKS.
Mines in Ohio, Penna., and W. Va.
La Belle Mine; Shaft; Pgh. No. 6 Seam, 42 in. thick.
PO—Steubenville, O.; SP—Same; CTY—Jefferson; RR—C. & P.; W. & L. E.
PR—R. C. Kirk.....Steubenville, O.
GM—G. B. Levan, " "
PA—R. M. Rice, " "
MS—R. W. McCasland, " "
EM—J. C. Gibson, " "
MM—A. J. Cox, " "
EE—Jas. Farrington, " "
S of H—Elec. loco.; track gauge 30 in.
S of M—3 Elec. Long Wall mach.
PP—34 Water tube boilers, total 16, 100 H. P., 2 gen. units 275 volts D. C., 300 K. W., 3 pumps.
EMP—168. Last fiscal year output 137,440 tons.

LAMA, J. M.
No. 4 Mine, Drift, Hocking No. 6 Seam 72 in. thick.
PO—Nelsonville, O. SP Same. CTY—Athens; RR—Hocking Valley.
TR—J. M. Lama,.....Nelsonville, O.
GM—J. M. Lama, " "
PA—Geo. A. Wraith, " "
ME Parker Sniffen, " "
MS—Nate French, " "
SM—Geo. A. Wraith, " "
S of H—Mules.
S of M—Hand.
EMP—20. Last fiscal year output 20,000 tons.
Sales Agency, Hocking Domestic Coal Co., Nelsonville, O.

LAWLER, JOHN L. & SON.
General Office, Columbus, O.
Lawler No. 7 Mine; Slope; Jackson District Seam No. 4, 48 to 60 in. thick.
PO—Clarion, O.; SP—Same; CTY—Vinton; RR—Hocking Valley, River Div.
TR—John L. Lawler.....Columbus, O.
GM—John L. Lawler, " "
GS—John C. Lawler, " "
PA—John L. Lawler, " "
EM—E. R. Kelly.....Wellston, O.
EE—George Steele.....Clairton, O.
MS—George Steele, " "
SCO—Lawler & Fitzpatrick,..Clarion, O.
S of H—Mules, and 1 Elec. loco.; track gauge 37½ in.
S of M—5 Elec. mach.
PP—2 Empire water tube boilers, total 280 H. P., 1 gen. unit 250 volts D. C.
EMP—55. Last fiscal year ouput 30,000 tons.

L. & H. COAL CO.
Big Run Mine, Slope, Pittsburgh No. 8 Seam, 11 to 6 ft. thick.
PO—Athens, O., SP—Broadwell, O., CTY—Athens. RR—M. C. & C.
PR—J. N. Hizey.....Athens, O.
TR—J. N. Hizey, " "
GM—J. N. Hizey, " "
SECY—Wm. Hoover, " "
S of H—Mules.
S of M—1 Elec. mach.
PP—1 Pump.

LOCUST GROVE COAL CO.
Locust Grove and Flint Hill Mines; Drift; No. 6 Seam, 42 to 68 in. thick.
PO—Coshocton, O.; SP—Same; CTY—Coshocton. RR—W. & L. E.
GM—John Williams.....Coshocton, O.
PA—John Williams, " "
MS—John Williams, " "
S of H—Mules; track gauge 32 and 36 in.
S of M—Hand.
EMP—27. Last fiscal year output 12,000 tons. Flint Hill new mine.

LOMAX COAL CO.
Lomax Mine, Drift; Limestone Seam; 4 ft. thick..
PO—McArthur, O.; SP—Same; CTY—Vinton; RR—Hocking Valley.
PR—Hampson Lomax.....McArthur, O.
TR—F. L. Lomax, " "
GM—Peter Lomax, " "
MS—H. E. Lomax, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
EMP—8. Last fiscal year output 3,682 tons.

LONG, THOMAS, COAL CO.
General Office, Shadyside, O.
Crystal Mine, Slope, Pgh. No. 8 Seam. 72 in. thick.
PO—Bellaire, O. SP—Same. CTY—Belmont. RR—B. & O. and Penna. —— O. R. & W. R. R.
PR—Thomas Long, ...Shadyside, O.
MS—Thomas Long, "
PA—Geo. M. Mertz, .. Bellaire, "
CE—D. A. Elkin, " "
FE—Chas. Keck. .... Shadyside, "
S of H—Mules and Elec. loco.
S of M—Hand and 1 elec. machine.
PP—2 pumps. Purchase power.
EMP—12 Last fiscal year output 11,000 tons.

LOOMIS-MOSS COAL CO. THE
Now Akron Coal Co.

LORAIN COAL & DOCK CO.
General Office, New Hayden Bldg., Columbus, O.
PR—D. P. Cary, ... Columbus, O.
VP—R. W. Braggins, " "
PA—R. L. Wildermuth, " "
TR—Ray L. Phelps, " "

Wheeling Creek, Lansing and Blaine Mines, Drifts, Pgh. No. 8 Seam.
PO—Bridgeport, O. SP—Same. CTY—Belmont. RR—B. & O.; C. L. & W. Div.
S of H—Elec. locomotives.
S of M—Elec. machines.

Crescent Mines, Drift, Pgh. No. 8 Seam.
PO—Crescent, O. SP Same CTY—Belmont RR—B. & O., C. L. & W.
S of H—Elec. locomotives.
S of M—Elec machines.

Lorain Mine; Drift; Island Creek Seam
PO Lorain, O.; SP Sam; CTY—Lorain; RR—C. & O.; Guyan Valley Br.
S of H—Elec. loco.
S of M—Elec. mach.

LUHRIG COAL WASHING & MINING CO.
General Office, Charleston, W. Va.
Luhrig Mine, Shaft, Seam 5½ to 10 ft. thick. Operate washery.
PO—Luhrig, O. SP—Same. CTY—Athens. RR—B. & O. S. W.
PR—F. W. Cool....Charleston, W. Va.
GM—F. W. Cool, " "
PA—F. W. Cool,...Charleston, W. Va.
TR—S. C. Boyer, ... Athens, O.
EM—Wm. Sands, " "
MS—John Gibbs, ... Luhrig, "
EE—Marion Bell, " "
SM—Andrew Murphy, " "
S of H—5 elec. locos. Track gauge 42 in.
S of M—3 elec. mach.
PP—4 return tubular boilers, total 500 H. P., 4 gen. units 250 volts D. C., 2 pumps. Sales agent New River & Ohio Coal Co., Charleston, W. Va.

McARTHUR BRICK CO.
Drift Mine; No. 4 Seam, 54 in. thick.
PO—McArthur O.; SP Same; CTY—Vinton.
PR—H. B. Hamilton.....McArthur, O.
TR—A. Wise, Jr., " "
GM—L. W. Sprague, " "
Mine coal for their own use.

McBURNEY, GEORGE.
McBurney Mine; Drift; No. 8 Seam.
PO—R. F. D., Barnesville, O.; SP—Same; CTY—Belmont; RR—B. & O.
GM—George McBurney..Barnesville, O.
MS George McBurney, " "
S of H—Mules.
S of M—Hand.
Last fiscal year output, 1,200 tons.

McGARVEY, J. A.
Garrett No. 2 Mine, Drift, No. 6 Hocking Seam.
PO—Philo, O. SP—Same. CTY—Muskingum. RR—B. & O. and O. & L. K.
PR—J. A. McGarvey .....Philo, O.
MS—J. A. McGarvey, " "
S of H—Mules and rope.
S of M—1 elec. machine.
PP—1 return tubular boiler, gen. unit 250 volts A. C.
EMP—15. Last fiscal year output 4,000 tons.

MANHATTAN COAL COMPANY.
General Office, Columbus, Ohio.
PR—H. H. Long, ... Columbus, O.
TR—E. H. Davis, " "
PA—P. C. Morris.....Nelsonville, O.
GS—P. C. Morris, .. Nelsonville, "
EM—J. L. Murphy, " "
MM—P. B. Verity, " "
EE—P. B. Verity, " "
Sales agents, New York Coal Co., Columbus, Ohio.

Mine No. 30; Drift; No. 6 Seam, 48 to 96 in. thick. Op rate Washery.
PO—Orbiston, O. SP—Same. CTY—Hocking. RR—Hocking Valley.
MS—P. W. Wickham, Nelsonville, O.
S of H—2 elec. loco. Track gauge 42 inches.
S of M—6 elec. machines.
PP—1 200 K. V. A. M. G. set. Power purchased.
EMP—290.

Mine No. 31, Drift, Middle Kittanning Seam 48 to 96 in. thick. Operate Washery.
PO—Buchtel, O. SP—Same. CTY—Athens. RR—Hocking Valley.
MS—Geo. McMahon.....Murray, O.
S of H—2 elec. locos. Track gauge 42 inches.
S of M—5 elec. machines.
PP—1 250 K. V. A., 1 100 K. V. A. M. G. Set. Power purchased.
EMP—275.

Mine No. 34, Drift, Middle Kittanning Seam, 6 to 3 ft. thick.
PO—Nelsonville, O. SP—Floodwood, O. CTY—Athens. RR—Hocking Valley.
MS—M. Brandenberg, Nelsonville, O.
S of H—Rope. Track gauge 42 in.
S of M—2 elec. machines.
PP—1 return tubular boiler, 150 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—60.

Continued on Next Page.

MANHATTAN COAL CO.—Continued.
Mine No. 36, Drift, Upper Freeport seam, 4 to 5 ft. thick. Operate washery.
PO—Buchtel, O. SP—Same. CTY—Athens. RR—Hocking Valley.
MS—Wm. Pierce.....Nelsonville, O.
S of H—8 elec. gathering locos. Track gauge 42 in.
S of M—6 elec. machines.
PP—3 pumps; 1 250 K. V. A., 1 100 K. V. A. M. G. set. Power purchased.
EMP—200.

Mine No. 37, Drift, Middle Kittanning Seam, 5 to 7 ft. thick. Operate washery.
PO—Nelsonville, O. SP—Buchtel, O. CTY—Athens. RR—Hocking Valley.
MS—John Murphy, ...Nelsonville, O.
S of H—1 elec. loco. Track gauge 42 inches.
S of M—2 elec. machines.
PP—175 K. V. A. M. G. set, 3 pumps. Power purchased.
EMP—150.

MAPLE-GALLIA COAL CO.
Out of business.

MARKLEY, GEO. J.
Huff Run Mine; Drift; No. 6 Seam, 42 in. thick.
PO—Mineral City, O. SP—Same. CTY—Tuscarawas. RR—B. & O.
PA—Geo. J. Markley, Mineral City., O.
SB—Geo. J. Markley, " "
S of H—Rope; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler, 100 H. P.

MASSILLON-BELMONT COAL CO., THE
One mine in Ohio.
PR—David Reed. ..... Massillon, O.
TR—J. C. Haring, " "
PA—J. C. Haring, " "

MASSILLON CITY COAL CO., THE
Massillon City No. 5, Massillon or No. 1 Seam, 4½ to 2½ ft. thick.
PO—Massillon, O. CTY—Stark. RR—B. & O., Pigeon Run Branch.
PR—J. F. Pocock.....Massillon, O.
TR—J. C. Haring, " "
PA—J. C. Haring, " "
MS—Wm. J. Penman, " "
S of H—Mules.
S of M—Hand.
EMP—75. Last fiscal year output 34,000 tons.

MASSILLON COAL MNG. CO., THE
General Office, Cleveland, O.
Nos. 12, 23, 24, 25, 26 and 27 Mines. Shafts, No. 1 or Massillon Seam, 4 ft. thick. Operate washery.
PO—Massillon, O. SP—Canton and Orville. CTY—Stark & Wayne. RR—Penna. Co., W. & L. E., B. & O.
PR—D. R. Hanna, ... Cleveland, O
TR—M. A. Hanna, " "
GM—Michael Gallagher, "
GS—John Whelan, Jr., Massillon, O.
PA—F. F. Cadden.....Cleveland, O.
S of H—Mules and 2 elec. locos. Track gauge 3 ft. 3 in.
S of M—Hand and 13 elec. machines.
PP—20 return tubular boilers, total 2,000 H. P., 6 gen. units, 250 volts D. C., 1 air comp., 14 pumps
EMP—400. Last fiscal year output 155,000 tons. Sales Agent, M. A. Hanna & Co., Cleveland, O.
Mine idle for 4 months.

MASSILLON ELM RUN COAL CO.
General Office, Cleveland, O.
Nos. 9, 10 and 11 Mines; Shafts.
PO—Massillon, O.; CTY—Stark.
No report.

MASSILLON OAK HILL COAL CO.
Oak Hill Mine, Shaft, No. 1 Seam, 3½ ft. to 6½ ft. thick.
PO—West Lebanon, O.; SP—Brewster, O.; CTY—Wayne; RR—W. & L. E.
PR—John C. Albright, .. Massillon, O.
TR—John C. Albright, " "
GM—C. H. Albright, " "
PA—C. H. Albright, " "
MS—Geo. Bullach, " "
EM—D. C. Borton. .. Alliance, "
S of H—Mules. Track gauge, 39 in.
S of M—3 elec. and 1 comp. air mach.
PP—2 water tube boilers, 1 return tubular boiler, total 200 H. P., 1 gen. unit, 250 volts D. C., 3 pumps.
EMP—20. Last fiscal year output 18,000 tons. Sales Agency Albright Coal Co., Cleveland, O.

MASSILLON-TUSCARAWAS COAL CO., THE
General Office, Massillon, O.
Central Valley Nos. 1 and 2 Mines. Drifts, 3 ft. 8 in. to 4 ft. 4 in. thick.
PO—New Cumberland, O. SP—Same. CTY—Tuscarawas. RR—W. & L. E.
PR—J. C. Corns, ... Massillon, O.
TR—H. T. Beatty, " "
GM—R. W. Johns, " "
PA—R. W. Johns, " "
MS—L. Roberts .....Somerdale, O.
S of H—Tail rope Track gauge 39 in.
S of M—14 comp. air mining mach.
PP—1 air comp., 2 pumps, boilers total 300 H. P.
EMP—125. Last fiscal year output 100,000 tons. Sales agent, R. W. Johns.

MATHIAS, JOHN.
Nos. 1 and 2 mines, Drift, No. 6 Seam, 3 ft. 1 in. to 4 ft. 2 in. thick.
PO—New Philadelphia, O. CTY—Tuscarawas. RR—B. & O., C. & P.
GM—John A. Mathias, New Philadelphia, O.
PA—John A. Mathias, New Phila., O.
MS—John A. Mathias, " "
S of H—Mules. Track gauge 30 and 39 in.
S of M—Hand.
EMP—No. 1, 8; No. 2, new mine. Last fiscal year output, No. 1, 6,900 tons.

MAXEY, W. R.
Halley Farm Mine, Drift, Newcastle No. 5 Seam, 3 to 3½ ft. thick.
PO—Culbertson, O. SP—Lisman Junction, O. CTY—Lawrence. RR—D. T. & I.
PA—W. R. Maxey, .. Culbertson, O.
MS—W. R. Maxey, " "
SM—W. R. Maxey, " "
S of H—Mules and incline. Track gauge 36 in.
S of M—Hand.
EMP—40. Last fiscal year output 12,000 tons.

MAYNARD COAL CO.
General Office, Columbus, O.
GM—H. H. Heiner.....Columbus, O.
PA—H. H. Heiner, " "
EM—George L. Sherman....Pomeroy, O.

Nos. 1, 2 and 3 Mines; Drift.
PO—Rutland, O.; SP—Same; CTY—Meigs; RR—K. & M.
MS—(1) L. J. Heiner, Rutland, O.; (2) Ed Kennedy, Rutland O.; (3) G. A. Preest, Middleport, O.
S of H—Mules.
S of M—Hand.
PP—4 Boilers, total 600 H. P., 1 gen. unit, 250 volts D. C.

Wainwright Mine; Shaft; No. 2 Seam, 22 to 44 in. thick.
PO—Wellston, O.; SP—Same; CTY—Jackson; RR—C. H. & D.
MS—Theo. Waters.....Wellston, O.
S of H—1 Elec. loco and mules; track gauge, 37 1-2 in.
S of M—Elec. mach. and hand.
PP—2 Return tubular boilers, total 220 H. P., 1 gen. unit, 250 volts D. C., 4 pumps.

MEEKER RUN COAL CO. (THE)
Meeker Run Mine; Drift; No. 6 Seam; 6 to 7 ft. thick.
PO—Nelsonville, O.; SP—Same; CTY—Athens; RR—H. V.
PR—C. H. Terry, ...Nelsonville, O.
PA—C. H. Terry, " "
EM—C. H. Terry, " "
TR—V. H. Voorhis, " "
MS—Frank Patton, " "
S of H—Mules and rope; track gauge 42 in.
S of M—1 Elec. mach.
PP—1 Lidgerwood return tubular boiler; power purchased.
EMP—20. Output 25,000 tons.

MEISTER COAL CO., THE
Meister Mine, Drift, No. 8 Seam, 4 ft. 10 in. to 5½ ft. thick.
PO—Flushing, O. SP—Same. CTY—Belmont. RR—B. & O.
PR—Joseph Meister, ... Flushing, O.
TR—Jacob Meister, " "
GS—Joseph Meister, " "
MS—Chiles Evans.....Flushing, O.
EM—D. A. Elkin, ... Bellaire, "
S of H—Mules and 2 elec. locos. Track gauge 36 in.
S of M—6 elec machines.
PP—2 Union Iron Works return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—110. Last fiscal year output 30,000 tons. Sales Agents, H. S. Odbert Coal Co., Cleveland, O

MIDDLE STATES COAL CORPORATION.
General Office, Chicago, Ill.
Two mines in Ohio, 2 in Illinois, 1 in Indiana.
Imperial Nos. 1 and 2, Shaft.
PO—Derwent, O. SP—Same. CTY—Guernsey. RR—P. R. R.
PR—T. J. O'Gara, ... Chicago, Ill.
PA—H. C. Barnebee, " "
GS—E. LeGhent, .. Terre Haute, Ind.
S of H—Elec. loco., mules and rope.
S of M—Elec.
PP—3 boilers.

MILTON MINING CO.
No. 1 Mine, Shaft, No. 2 Seam, 3 ft. thick.
PO—Wellston, O. CTY—Jackson. RR—B. & O.
MS—Herbert Poore, ... Wellston, O.
EMP—27. State report.

MIDVALE COAL CO.
Midvale No. 4 Mine; Drift; 48 to 60 in thick.
PO—Midvale, O. SP—Same. CTY—Tuscarawas. RR—B. & O.
PR—H. E. Cole, ... Midvale, O.
TR—R. W. Rutledge.....Midvale, O.
GM—R. W. Rutledge, " "
GS—R. W. Rutledge, " "
MS—C. B. Fox, " "
S of H—Mules and rope. Track gauge 38 in.
S of M—3 Elec. mach.
PP—1 water tube boiler, one pump.
EMP—150. Last fiscal year output 70,000 tons.

MIDVALE-GOSHEN COAL CO. THE
General Office, 612 Electric Bldg., Cleveland, O.
Wainwright Mines, Slope and Drift, No. 6 Seam, 4 to 4½ ft. thick.
PO—Wainwright, O. SP—Uhrichsville, O. CTY—Tuscarawas. RR—B. & O.
PR—J. G. Masterton, .. Cleveland, O.
TR—H. M. Carpenter, " "
GM—J. G. Masterton, " "
PA—J. G. Masterton, " "
GS—J. C. Kyte, .. Wainwright, "
S of H—Mules, rope and 2 elec. loco. Track gauge 36 in.
S of M—Pick and 12 elec. machines.
PP—4 water tube boilers, Erie make, total 500 H. P., 2 gen. units, 250 volts D. C., 3 pumps.

MILTON COAL & LIME CO., THE
General Office, Canon, O.
Milton Mine; Drift; No. 4 or 5 Seam, 48 to 60 in. thick.
PO—North Industry, O.; SP—Howenstine, O.; CTY—Stark; RR—B. & O.
PR—M. Shaeffer.....Canton, O.
TR—M. Shaeffer, " "
GM—M. Shaeffer, " "
PA—M. Shaeffer, " "
MS—E. Dime.....North Industry, O.
S of H—Mules.
S of M—Hand.
PP—1 pump.
EMP—40. Last fiscal year output, 20,000 tons.
Successors to Evansdale Lime & Clay Products Co.

MINERS BLOCK COAL CO. (THE)
Kelley Mine; Drift; No. 8 Pgh. Seam, 54 to 66 in. thick.
PO—Rayland, O.; SP—Same; CTY—Jefferson; RR—P. R. R., C. & P. River Div.
PR—Chas. A. Miller.....Rayland, O.
GM—Chas. A. Miller, " "
PA—Chas. A. Miller, " "
TR—D. C. Eaton, " "
EM—M. D. Gibson, " "
MM—W. W. Bremer, " "
S of H—2 Elec. loco. and mules; track gauge, 36 in.
S of H—6 Elec. machs.
PP—1 Erie return tubular boiler, 150 H. P., gen units, 250 volts D. C., 2 pumps. Power purchased.
EMP—125. New Company.

MODERN COAL MINING CO.
General Office, Columbus, O.
Stripping Mine; No. 8 Seam, 56 to 72 in. thick.
PO—Parlett, O.; SP—Same; CTY—Jefferson; RR—W. P. T.
PR—A. Brenholts.....Columbus, O.
TR—A. Brenholts, " "
GM—W. P. Bates.....Partlett, O.
MS—W. P. Bates, " "
PA—Roy Brenholts, " "
S of M—Steam shovels.
Successors to the Wabash Coal Co.

MINE NO. 3 COAL CO.
Mine No. 3.
PO—New Straitsville, O.; SP—Shawnee, O.; CTY—Perry.
No report.

MOHAWK COAL CO.
General Office, Chillicothe, O.
Drift Mine, No. 5 Seam, 48 to 62 in. thick.
PO—Wellston, O.; SP—Same; CTY—Jackson; RR—C. H. & D., Buckeye Branch.
PR—J. M. Rittenour, Chillicothe, O.
TR—Valentine Rice, " "
GM—J. A. Lockard, ...Wellston, O.
PA—J. A. Lockard, " "
GS—J. A. Lockard, " "
MS—Eli Gintry, " "
EM—Ed. Kelley, " "
SCO—The Mohawk, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.

MONITOR COAL MINING CO. THE
See Burton-Townsend Co.

MONSARRAT BROTHERS.
General Office, 211 Hartman Bldg., Columbus, O.
Slope Mine; Hocking Seam.
PO—Hemlock, O.; SP—Same; CTY—Perry; RR—Zanesville & Western.
S of H—Mules.
S of M—2 Elec. machines.
PP—Gas engines.
EMP—75.

MOON COAL CO.
Out of business.

MORGAN, A. J., COAL CO.
General Office, Bellaire, Ohio.
GM—A. J. Morgan, ... Bellaire, O.
PA—Herbert N. McVay.....Bellaire, O.
GS—Jacob L. Long, .. Shadyside, "
EM—D. A. Elkins.....Bellaire, O.

Edgehill Mine, Drift, Pittsburgh No. 8 Seam, 5 ft. thick.
PO—Bellaire, O. SP—Same CTY—Belmont. RR—C. & P. Div., Penna
S of H—2 elec. locos. Track gauge 42 in.
S of M—Electric.
PP—Purchase power.
EMP—100.

Taplin Mine, Pittsburgh No. 8 Seam, 5 ft. thick.
PO—Bannock, O. SP—Same. CTY—Belmont. RR—C. L. & W. Div., B. & O.

MORGAN RUN COAL & MINING CO. THE
PR—Robert B. Dennis, Coshocton, O.
GM—Robert B. Dennis, " "
GS—Robert B. Dennis, " "
PA—Robert B. Dennis, " "

Morgan Run No. 3, Drift, No. 6 Seam, 3 ft. to 5 ft. thick.
PO—Coshocton, O. SP—Same. CTY—Coshocton. RR—W. & L. E., & P. RR.
MS—Roy Shuley.
S of H—1 elec. loco. Track gauge 36 in.
S of M—Hand and elec. machines.
PP—1 pump, 1 gen. unit 4,000 volts A. C., 60 cycle, 3 phase. Power purchased.
EMP—120.

Morgan Run No 4, Drift, No. 6 Seam, 3 to 5 ft. thick.
PO—Coshocton, O. SP—Same. CTY—Coshocton. RR—W. & L. E., & P. RR.
MS—E. C. Sauerhey.
S of H—1 elec. loco.
S of M—Hand and elec. machines.
PP—1 pump, 1 gen. unit 4,000 volts A. C., 60 cycle, 3 phase. Power purchased.
EMP—40.

MORRIS COAL CO.
General Office, ... Cleveland, O.
PR—Wm. Harper, " "
TR—Wm. Harper, " "
GS—Jas. Prendergast.....Cambridge, O.
PA—G. W. Neyman, " "
EM—J. C. Simpson, " "
EE—Chas. Touvells.....Lore City, O.
Andy Hinton, .. Senecaville, "

Cleveland Mine, Shaft, No. 7 Seam, 5 to 6 ft. thick.
PO—Senecaville, O. SP—Same. CTY—Guernsey. RR—B. & O., Eastern Ohio Branch.
MS—Thos. Vail, ... Senecaville, O.
S of H—Mules and 8 elec locos. Track gauge 42 in.
S of M—10 elec. machines.
PP—5 water tube boilers, 2 gen. units 250 volts D. C., 6 pumps.
EMP—250. Last fiscal year output 165,307 tons.

Black Top Mine, Shaft, No. 7 Seam, 4½ to 5½ ft. thick.
PO—Lore City, O. SP—Same. CTY—Guernsey. RR—B. & O.
MS—Walter Sneddon, .. Lore City, O.
SCO—The Black Top Supply Co., Lore City, O.
SM—John H. Davis, .. Cambridge, O.
S of H—Mules and 8 elec. locos. Track gauge 42 in.
S of M—10 elec. machines.
PP—5 water tube boilers, 2 gen. units, 250 volts D. C., 3 pumps.
EMP—300. Last fiscal year output 174,225 tons.

MORRIS-POSTON COAL CO.
General Office, Cleveland, O.
Dun Glen Mine, Drift, No. 8 Seam.
PO—Dun Glen, O. SP—Same. (Prepay) CTY—Jefferson. RR—W. & L. E.
GM—T. R. Biddle, ... Dun Glen, O.
PA—T. R. Biddle, " "
EM—B. B. Ireland, " "
MS—C. H. Thompson....Dun Glen, O.
SM—R. L. Tomlinson, " "
S of H—9 elec. locos.
S of M—15 elec. machines.
PP—Gen units, 250 volts D. C., 6 boilers, total 900 H. P.
EMP—400.

MULLINS, JAMES, COAL CO. (THE)
General Office, Martin Bldg., Canton, O.
Goshen Mine; Drift; No. 6 Seam, 48 to 54 in. thick.
PO—New Philadelphia, O.; SP—Same; CTY—Tuscarawas; RR—P. R. R., Beaver Dam Branch.
PR—James Mullins, ...Wooster, O.
TR—C A McDonald, Canton, O
GM—D. P. Loomis, " "
GS—D. P. Loomis, " "
PA—D. P. Loomis, " "
MS—E. C. Howard, New Phila., O.
EM—George E. Arnold.
S of H—6 Elec. Loco.
S of M—9 Elec., 8 comp. air mach.
PP—3 Return tubular boilers, total 450 H.P., 2 gen. units 250 volts D.C., 1 compressor.
EMP—150. Last fiscal year output 180,000 tons.
Sales Agent, C. A. McDonald.

MURRAY CITY MINING CO.
Slope Mine, Seam 6½ to 7 ft. thick.
PO—Murray City, O. SP—Same. CTY—Hocking. RR—Hocking Valley.
PR—H. H. Sisson, .. Murray City, O.
TR—A. R. Jones, " "
GM—C. E. Bennett, " "
PA—A. Ubrig, " "
MS—Wm. Matheny, " "
EE—Peter Carroll, " "
S of H—Horses. Track gauge 42 in.
S of M—2 Elec. machines.
EMP—30. Last fiscal year output 25,000 tons. Sales agency, W. H. Warner Coal Co., Cleveland, O.

MURRAY & HEMLOCK COAL CO.
Out of business.

NATIONAL COAL CO.
General Office, Cleveland, O.
PR—Chas. Baird, Center Conway, N. H.
TR—W. J. McFarlin..Cleveland, O.
PA—W. J. McFarlin, " "
GM—H. E. Loomis, " "
GS—F. Firestone, .. Cambridge, "
EM—E. C. Murray.....Cambridge, O.
MM—T. C. Murphy, " "
EE—T. C. Murphy, " "

Little Katie No. 1 Mine; Shaft; No. 7 Seam, 48 to 8 4in. thick.
PO—Byesville, O.; SP—Same; CTY—Guernsey, O.; RR—P. R. R.
MS—Thos. Bradbury.....Byesville, O
S of H—4 Elec. loco. and mules track gauge 42 in.
S of M—9 Elec. mach.
PP—4 Water tube boilers, total 600 H. P., 2 gen. units D. C., 3 pumps.
EMP—225. Last fiscal year output 250,000 tons.

Little Katie No. 2 Mine; Slope; No. 7 Seam, 66 to 72 in. thick.
PO—Pleasant City, O.; SP—Blue Bell, O.; CTY—Guernsey; RR—B. & O.
MS—Chas. Shimp.....Cambridge, O.
S of H—11 Elec. loco.; track gauge 42 in.
S of M—9 Elec. mach.
PP—1 pump. Power from Minnehaha.
EMP—350. Last fiscal year output 400,000 tons.

Harryette Mine; Shaft; No. 7 Seam, 72 to 84 in. thick.
PO—Byesville, O.; SP—Same; CTY—Guernsey, RR—P. R. R.
MS—H. B. Oliver.....Byesville, O.
S of H—4 Elec. loco. and mules; track gauge 42 in.
S of M—6 Elec. mach.
PP—1 pump. Power from Minnehaha. Last fiscal year output 200,000 tons.

Minehaha Mine; Slope; No. 7 Seam, 72 to 84 in. thick.
PO—Byesville, O.; SP—Same; CTY—Guernsey; RR—P. R. R.
MS—M. Clodfedter.....Claysville, O.
S of H—13 Elec. loco.; track gauge 42 in.
S of M—11 Elec. mach.
PP—10 Water tube boilers, total 1500 H. P., 7 gen. units D. C., 1 pump.
EMP—400. Last fiscal year output 500,000 tons.

NAVARRE STREET COAL CO.
PO—Navarre Road S. W., Canton, O.
GM—James G. Graham, " "
PR—H. W. Dauchey " "
Operating a retail coal business.

NEGLEY COAL CO. (THE)
Pleasant Valley Mine, Drift, No. 6 Seam, 39 in. thick.
PO—Negley, O. SP—Same. CTY—Columbiana. RR—P. L. & W.
GS—P. H. Murphy.
MS—Harvey Burson.
S of H—Mules.
S of M—Hand.

NEW PHILADELPHIA COAL & MINING CO.
General Office, New Philadelphia, O.
C. and F. Mines; Drifts No. 6 Seam, 42 to 60 in. thick.
PO—New Phialdelphia, O.; SP—Same and Joyce, O.; CTY—Tuscarawas; RR—P. R. R., C. & M., and C. & P. Br.
PR—Emry Ankney..New Philadelphia, O.
GM—Emery Ankney, " "
PA—O. O. Poulson, " "
GS—Ed. Lahmers, " "
TR—John F. Gruber, " "
MS—Jacob Lorenz and John W. Fickes, New Philadelphia, O.
CE—Geo. Arnold, " "
EE—Monroe Miller, " "
S of H—9 Elec. loco. and mules; track gauge 39 in.
S of M—9 Elec. mach.
PP—5 Return tubular boilers, total 675 H. P., gen. unit 250 volts D. C., 1 comp. and 1 pump.
EMP—250.
Sales Agent, O. O. Poulson, New Philadelphia, O.

NEW PITTSBURGH COAL COMPANY, THE
General Office, Columbus, O.
PR—G. C. Weitzell, .. Columbus, O.
TR—H. S. Mervin, " "
PA—H. S. Mervin, " "
GS—F. S. Knox, Jr., Nelsonville, "
EM—F. S. Knox, Jr., " "
EE—Wm. Guseman.....Athens, O.
SCO—The New Pgh. Coal Co. Buyer, J. W. Roberson, Nelsonville, O. Sales agent, J. A. Rundio, Columbus, O.

Greendale Mine No. 5, Drift, No. 6 Seam.
PO—Murray City, O. SP—Same. CTY Hocking. RR—Hocking Valley.
MS—John Slater, .. Murray City, O.
SM—B. A. Andrews, " "
S of H—Animal, rope and elec. loco. Track gauge 42 in.
S of M—elec machines.
EMP—350. Annual output 271,208 tons.

Murray City No. 7, Drift, No. 6 Seam.
PO—Murray City, O. SP—Same. CTY—Hocking. RR—Hocking Valley.
MS—John Slater.....Murray City, O.
SM—B. A. Andrews, " "
S of H—Animal, rope and elec. loco. Track gauge 42 in.
S of M—Elec. machines.
EMP—400. Annual output 253,161 tons.

Kittanning No. 9, Shaft, No. 6 Seam.
PO—Nelsonville, O., R.F.D. No. 1. SP—Beaumont, O. CTY—Athens. RR—Hocking Valley.
MS—Dan Shay, Nelsonville, O., R.F.D.No. 1.
SM—A.J.Curl, " " " "
S of H—Animal and elec. loco. Track gauge 42 in.
EMP—400. Annual output, 242,607 tons.

New Monarch No. 10, Shaft, No. 6 Seam.
PO—Athens, O., R. F. D. No. 6; SP—Hocking, O.; CTY—Athens; RR—H. V.
MS—Jos. Slater, ... Athens, O.
SM—Phillip Miller.
S of H—Animal and elec. loco. Track gauge 42 in.
EMP—300. Annual output 232,114 tons.

NEWTON COAL & MINING CO
Newton Mine, Slope, No. 7 or Upper Freeport Seam, 4 to 4½ ft. thick.
PO—Dennison, O. SP — Philadelphia Roads, O. RR—P.C.C. & St. L.
PR—C. G. Newton.....Dennison, O.
TR—H. D. Woodbridge, .. Newark, "
GM—C. G. Newton.....Dennison, O.
PA—Chauncey Newton, " "
EM—Chauncey Newton, " "
EE—F. O. Culley, " "
MS—F. O. Culley, " "
SCO—The Newton Coal & Mining Co.
S of H—Head and tail rope. Track gauge 36 in.
S of M—5 elec. chain breast machs.
PP—2 pumps, 2 return tubular boilers, 300 H. P., 1 gen. unit,. 250 volts D. C.
EMP—95. Annual output 75,000 tons.

NEW YORK COAL CO.
Leased to the Manhattan Coal Co.

NICHOLSON CLAY PRODUCTS CO.
General Office, Cambridge, O.
Drift Mine; No. 7 Seam, 48 to 66 in. thick.
PO—Byesville, O.; SP—Same; CTY—Guernsey; RR—P. R. R., Marietta Div.
PR—A. W. Nicholson....Cambridge, O.
TR—A. W. Nicholson. " "
MS—John Bennett.....Byesville, O.
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 2 pumps.
EMP—50. Last fiscal year output, 10,000 tons.

NICHOLSON, P. R.
Nicholson Mine, Drift, No. 8 Seam, 5 ft. thick.
PO—Dillonvale, O. CTY—Jefferson. RR—L. E. A. & W.
GM—P. R. Nicholson, Dillonvale, O
GS—P. R. Nicholson. " "
S of H—Mule. Track gauge 30 in.
S of M—Hand.
EMP—8. Last fiscal year output 6,694 tons.

NORTH ROCKING COAL CO.
PO—Murray, O.; CTY—Hocking
No report.

NORTHERN FUEL CO.
Mine worked out.

NORTH LIMA COAL CO.
North Lima Mine, Shaft, No. 3 Seam, 24 to 30 in. thick.
PO—Washingtonville, O.; SP—North Lima, O.; CTY—Columbiana; RR—Youngstown & Southern.
PR—George Day .....North Lima, O.
TR—Paul Coachway, " "
GM—Thos. Macallum..Washingtonv'le, O.
PA—Thos. Macallum, " "
MS—Thos. Macallum, " "
S of H—Mules. Track gauge 2 ft.
S of M—1 electric machine.
PP—1 generating unit, 250 volts D. C., 1 pump, purchase power.
EMP—24. Last fiscal year output 4,575 tons.

NORTHERN MINING & FUEL CO.
General Office, Nelsonville, O.
No. 24 Mine; Slope; No. 7 Up. Freeport Seam, 50 to 60 in. thick.
PO—Jacksonville, O.; SP—Same; CTY—Athens; RR—K. & M., Green's Run Branch.
PR—C. E. Burdette....Jacksonville, O.
MS—C. E. Burdette, " "
MM—F. Werner, " "
TR—C. C. Sharp.....Nelsonville, O
GM—C. C. Sharp, " "
PA—C. C. Sharp, " "
CE—C. C. Sharp, " "
EM—Parker Sniffen, " "
SCO—Sanders & Hope Co, Jacksonville, O.
S of H—Mules and 1 Elec. loco.; track gauge, 42 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, total 700 H. P., gen. unit, 250 volts D. C., 1 pump.
EMP—90. Last fiscal year output, 30,137 tons.
Sales Agency, W. A. Gosline & Co., Toledo, O.

NOVELTY BRICK & COAL CO.
Novelty Mine; Slope, No. 6 Seam, 30 in. thick.
PO—Newcomerstown, O.; SP—Same; CTY Tuscarawas; RR—C. & M.
PR—Henry Hess, ...Newcomerstown, O.
TR—T. S. Brooks, " "
GM—M. Hildebrand, " "
MS—Chas. Smith, " "
S of H—Mules and rope; track gauge 24 in.
S of M—2 Comp. air mach.
PP—Power from Brick Plant, 2 pumps.
EMP—10. Last fiscal year output 6,500 tons.
Coal used in Brick Plant.

OAK HILL COAL CO.
See Jackson & West Virginia Fuel Co.

OAK HILL FIRE BRICK & COAL CO (THE)
Oak Hill Mine; Drift; No. 4 Seam, 36 in. thick.
PO—Oak Hill, O. SP—Same. CTY—Jackson. RR—B. & O. S. W.
PR—John J. Thomas.....Oak Hill, O.
TR—T. J. Davies .
GM—T. J. Davies ..... " "
GS—T. J. Davies .....Oak Hill, O.
PA—T. J. Davies ..... " "
MS—James A. Whitt, " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—1 Return tubular boiler, 12 H. P.
EMP—7. Last fiscal year output 4,809 tons.
Mine for own use.

OHIO BLOCK CANNEL COAL CO.
PO—Coshocton, O.; CTY—Coshocton.
No report.

OHIO CANNEL COAL CO. (THE)
General Office, Victoria Bldg., St. Louis, Mo.
Drift Mine, Cannel Seam, 72 in. thick.
PO—Coshocton, O., R.F.D. No. 7; SP—Warsaw Junction, O.; CTY—Coshocton; RR—P.R.R., C. & A. C. Branch.
PR—Robt. C. Mason, Yonkers, N.Y.
TR—Geo. P. Heckel, St. Louis, Mo.
GM—Geo. P. Heckel, " "
EM—Geo. P. Heckel, " "
GS—Jas. P. Leach, ...Warsaw, O.
MS—Jas. Reed, " "
S of H—Mules and gravity.
S of M—Hand; Later will equip with elec. mach.
EMP—20. Output will be 200 tons daily within ninety days. Started to ship coal November 15.

OHIO FIRE BRICK CO
No. 5 Seam, 44 to 56 in. thick.
PO—Oak Hill, O. SP—Same CTY—Jackson. RR—B. & O.
PR—D. D. Davis .....Oak Hill, O
TR—D. D. Davis ..... " "
GM—E. P. Davis ..... " "
CE—E. P. Davis ..... " "
GS—A. M. Davis ..... " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, 100 H P
EMP—8. Last fiscal year output 9,000 tons.

OHIO MNG. & RAILROAD CO.
Horse Shoe Mine; Drift, Seam 44 in. thick.
PO—Mineral City, O; SP—Same; CTY—Tuscarawas; RR B. & O.
PR—Ed. Mangenbaugh..Mineral City, O.
TR—Chas. Kolp, " "
GM—H. R. Jenson, " "
PA—H. R. Jenson, " "
EE—George McCarthy, " "
MS—George Ray, " "
S of H—Mules.
S of M—1 Elec. mach.
PP—2 Return tubular boilers.
EMP—10.

OHIO & PENNA. COAL CO.
General Office, Cleveland, O.
TR—John M. Garfield...Cleveland, O.
GM—F. P. Prosser, " "
PA—J. Alex Taylor .... " "
Sales agent, S. H. Needs, Cleveland, O.

Walnut Hill Mine, Drift, No. 8 Seam, 5 ft. thick.
PO—Yorkville, O. SP—Same. CTY—Jefferson. RR—Penna R. R.
MS—J. C. Nelms .....Yorkville, O.
S of H—8 elec. locos. Track gauge 42 in.
S of M—9 elec. machines.
PP—3 return tubular boilers, total 450 H. P., 2 gen. units 500 volts D. C.
EMP—275.

West Pittsburgh No. 1, Slope, No. 7 Seam, 4½ to 6 ft. thick.
PO—Bergholz, O. SP—Same. CTY—Jefferson. RR—L. S. & M. S.
MS—M. Speicher .....Bergholz, O.
S of H—Rope, mules and 5 elec. loco. Track gauge 42 in.
S of M—9 elec. machines.
PP—4 return tubular boilers, total 600 H. P., 2 gen. units 250 volts D. C.
EMP—250. Last fiscal year output 141,000 tons.

West Pittsburgh No. 2, Shaft, No. 7 Seam, 4 to 6 ft. thick.
PO—Amsterdam, O. SP—Same. CTY—Jefferson. RR—L. S. & M. S.
MS—John Lees .....Amsterdam, O.
S of H—Mules and 4 elec. loco. Track gauge 40 in.
S of M—9 elec. machines.
PP—3 return tubular boilers, total 450 H. P., 1 gen. unit 250 volts D. C.
EMP—250 Last fiscal year output 114,000 tons.

OHIO RIVER COAL CO. (THE)
General Office, Columbus, O.
Drift Mine, No. 8-A Seam, 62 in. thick.
PO—Pomeroy, O. SP—Same. CTY—Meigs. RR—Hocking Valley, River Division.
PR—B. E. Hyde .....Columbus, O.
TR—B. M. Hyde ..... " "
GM—B. E. Hyde ..... " "
GS—J. J. Meinhart ....Pomeroy, O.
S of H—Mules. Track gauge 38½ in.
S of M—Pick.

OLIVER COAL CO.
General Office, Jenkins Arcade, Pittsburgh, Pa.
Oliver Mine, Drift, No. 8 Seam.
PO—Kenwood, O. SP—Same. CTY—Harrison. RR—W. & L. E.
PR—Geo. C. Johnston ..Pittsburgh, Pa.
MS—C. L. Lutton .....Kenwood, O.
S of H—Elec. locomotives.
S of M—Elec. machines.
PP—2 boilers, total 250 H. P., 500 volts D. C.
EMP—160.

PAN-AMERICAN COAL CO. (THE)
PR—H. L. Warren.....Cleveland, O.
TR—Lewis P. Schaus ..Mt. Vernon, O.
GM—Wayne Collier ....Zanesville, O.
PA—Wayne Collier .... " "
EM—Wayne Collier .... " "
GS—Loren Holmes ..... " "
Sales agent, Viltona Coal Co., Cleveland, Ohio.

Pan-American Mine. Drift. No. 6 Seam, 3 ft 8 in. to 4 ft. 2 in thick.

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PAN-AMERICAN COAL CO.—Continued.
PO—Cannelville, O. SP—Same. CTY—Muskingum. RR—Z. & W.
MS—Fred Dunn .....Cannelville, O.
S of H—2 elec. loco. and rope. Track gauge 36 in.
S of M—8 Elec. mach.
PP—2 return tubular boilers. total 300 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—115. Last fiscal year output 61,000 tons.

Sedalia Mine, Drift, No. 6 Mid Kittanning Seam, 4½ to 5 ft. thick.
PO—Jacksonville, O. SP—Same. CTY—Athens. RR—K. & M.
MS—Wm. Hilt.....Jacksonville, O.
S of H—1 elec. loco. and rope. Track gauge 42 in.
S of M—8 Elec. mach.
PP—2 water tube boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 3 pumps.
EMP—140. Last fiscal year output 86,000 tons.

Guernsey Mine, Shaft, No. 7 Seam, 4½ to 6 ft. thick.
PO—Coal Ridge, O. SP—Same. CTY—Noble. RR—P. R. R.
S of H—1 elec. loco. Track gauge 42 in.
S of M—3 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—50.

Gibbs Mine, Drift, No. 7 Seam, 10 to 12 ft. thick.
PO—Shawnee, O.. SP—Same. CTY—Perry. RR—Z. & W.
MS—G. C. Davis.....Shawnee, O.
S of H—Mules. Track gauge 42 in.
S of M—4 elec. machines.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—35. Last fiscal year output 21,000 tons.

Granger Mine, Slope and drift, No. 6 Seam, 4 ft. to 4 ft. 3 in. thick.
PO—Zanesville, O. SP—Same. CTY—Muskingum. RR—B. & O., Z. W.
MS—Thos. Corbett.. So. Zanesville, O.
S of H—1 elec. loco. Track gauge 36 in.
S of M—4 electric machines.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—70. Last fiscal year output 38,000 tons.

Turkey Run Mine; No. 6 Seam, 42 to 48 in. thick.
PO—Cannelville, O.; SP—Same; CTY—Muskingum; RR—Z. & W.
S of H—Elec. loco.
S of M—14 Elec. mach.
PP—Power purchased.
Last fiscal year output, 10,000 tons.

PEABODY COAL CO.
General Office, Chicago, Ill.
Greely No. 1 Mine, Drift, No. 6 Seam.
PO—Shawnee, O. SP—Same. CTY—Perry. RR—B. & O.
GM—W. H. Leland.....Chicago, Ill.
PA—H. E. Campbell..... " "
MS—R. E. McLain.....Shawnee, O.
EM—M. F. Pelteer .... " "
SCO—Norman Store. Buyer, C. M. Gillespie, Shawnee, O.
S of H—Elec. Locos.
S of M—Elec. machines.
EMP—330.

PEACOCK COAL CO. (THE)
PR—William Ebershach....Pomeroy, O.
TR—Frederick Ebershach.... " "
GM—Fredrick Ebershach ... " "
PA—Frederick Ebershach ... " "
GS—Wm. Ebershach " "
MM—Claude Darst ..... " "
EE—Claude Darst ..... " "
EM—Thos. Middleton..Middleport, O.
SCO—Red Anchor Dept. Store Co. Buyer, Edward Ebershach, Pomeroy, O. Red Star Grocery Co. Buyer, Richard Lawhead, Pomeroy, O
Sales Agents, A. W. Kuhns, Harrison Bldg., Columbus, O.; Puritan Coal Co., Chicago, Ill.

The Charter Oak Mine, Drift, Pomeroy or 8-A Seam, 4½ to 5½ ft. thick.
PO—Pomeroy, O. SP—Same. CTY—Meigs. RR—Hocking Valley.
MS—H. V. Carl .....Pomeroy, O.
S of H—Mules and 3 elec. loco. Track gauge 38½ in.
S of M—13 elec. machines.
PP—2 Babcock & Wilcox water tube boilers, total 800 H. P., 1 gen. unit 2,300 volts A. C., 3 phase, 60 cycle, 2 pumps. (Central Power Station Charter Oak Rolling Mill and Forest Run Mines.)
EMP—183. Last fiscal year output 83,413 tons.

Forest Run Mine; Shaft; No. 8 Pomeroy Seam, 54 in. thick.
PO—Pomeroy, O.; SP—Same; CTY—Meigs; RR—H. V.
MS—Ed Griffiths.....Pomeroy, O.
S of H—Mules; track gauge, 42 in.
S of M—10 Elec. mach.
PP—From central plant; 1 pump.
EMP—38.
Commenced operations in December, 1914.

Rolling Mill Mine, Drift, Pomeroy or 8-A Seam, 4½ to 5½ ft. thick.
PO—Pomeroy, O. SP—Same. CTY—Meigs. RR—Hocking Valley.
MS—James Duckworth ....Syracuse, O.
S of H—Mules and 4 Elec. loco. track gauge 38½ in.
S of M—14 elec. machines.
PP—Power plant at Charter Oak Mine.
EMP—195. Last fiscal year output 109,746 tons.

PERRY COUNTY COAL CO.
General Office, Columbus, O.
Chapman's Nos. 1 and 2 Mines, Drift and Slope, No. 6 Seam, 4½ ft. thick.
PO—Moxahala, O. SP—Same. CTY—Perry. RR—T. & O. C.
PR—H. N. Rose .....Moxahala, O
GM—H. N. Rose ..... " "
PA—H. N. Rose ..... " "
GS—H. N. Rose ..... " "
SM—Ray Young ..... " "
S of H—4 elec. locos. Track gauge 42 in.
S of M—7 elec. breast machines.
PP—3 return tubular boilers, total 450 H. P., 1 gen. unit, 250 volts D. C., 5 pumps.
EMP—160. Last fiscal year output 120,000 tons.

PINEY FORK COAL CO.
General Office, Columbus, O.
Stripping Mine; Pgh. No. 8 Seam, 55 to 63 in. thick.
PO—Weems, O.; SP—Smithfield, O.; CTY—Jefferson; RR—W. P. T.
PR—J. W. Blower .....Columbus, O
TR—J. W. Blower..... " "
PA—J. W. Blower and E. R. Graham, Columbus, O
MS—E. M. Findlay.....Bellaire, O.
S of H—2 Steam loco.
S of M—2 Steam shovels, electric driven.
PP—Purchased power.
New operation.

PITTSBURGH-BELMONT COAL CO.
PR—Alexander Neff.....Neffs, O.
GS—Franklin Neff .....Neffs, O.
PA—Franklin Neff. " "
TR—J. F. Mellott.....Bellaire, O.
Sales agency, B. & O. Coal Co., Cleveland, O.

Neff Nos. 1 and 2, Drifts, Pittsburgh No. 8 Seam, 5 to 6 ft. thick.
PO—Neffs, O. SP—Same. CTY—Belmont. RR—B. & O.
S of H—Mules and 9 elec. loco.
S of M—18 elec. machines.
PP—8 return tubular boilers.
EMP—449.

Pittsburgh-Belmont No. 3, Slope, Pittsburgh No. 8 Seam, 4 to 5½ ft. thick.
PO—Lafferty, O. SP—Same. CTY—Belmont. RR—B. & O.
S of H—6 elec. loco.
S of M—8 elec. machines.
PP—5 return tubular boilers.
EMP—110.

PITTSBURGH & CLEVELAND COAL CO.
General Office, Cleveland, Ohio.
PR—W. D. Sauters....Cleveland, O.
TR—W. D. Sauters..... " "
PA—W. D. Sauters..... " "
GM—T. E. Sauters..Martins Ferry, O.
GS—T. E. Sauters... " "
EE—Geo. Buchanan .. " "
EM—D. E. Elkin.....Bellaire, O.
Sales agent, Sauters Coal Co., Cleveland, Ohio.

Gaylord No. 1, Drift, No. 8 Pittsburg Seam, 5 to 7 ft. thick.
PO—Martins Ferry, O. SP—Same. CTY—Belmont. RR—C. & P. Div., Penna lines.
MS—Robert Swoden ..Martins Ferry, O.
S of H—4 elec. loco. Track gauge 36 in.
S of M—8 elec. machines.
PP—1 pump, 3 return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C.
EMP—200.

Gaylord No. 2, Drift, No. 8 Pittsburg Seam, 5 to 7 ft. thick.
PO—Martins Ferry, O. SP—Same; CTY—Belmont. RR—C. & P. Div. Penna. lines.
MS—Richard Delbridge,Martins Ferry O.
S of H—1 elec. loco. Track gauge 36 in.
S of M—5 elec. machines.
PP—1 pump. Power furnished from No. 1 mine.

PITTSBURGH MINING CO. (THE)
Hatfield Mine, Drift and Shaft, Pittsburg 8-9 or Pomeroy Seam, 4½ ft. thick. Washery Kanauga, O.
PO—Minersville, O. SP—Pomeroy, O. CTY—Meigs. RR—Hocking Valley.
PR—G. Hartweg .....Covington, Ky.
TR—J. T. Hatfield .... " "
GM—Wm. W. Miller.....Pomeroy, O.
GS—Wm. W. Miller ..... " "
PA—Wm. W. Miller ..... " "
MS—John D. Strickland.Minersville, O.
EM—Ohio Eng. & Contracting Co., Pomeroy, O.
EE—John Elliott.
SCO—Pittsburgh Store. Buyer, I. R. Karr, Minersville, O.
S of H—Mules, 3 elec. loco. Track gauge 38½ inches.
S of M—13 elec. machines.
PP—500 volts D. C. Power purchased, 2 pumps.
EMP—225. Daily capacity 1,000 tons.
Sales agent, Wm. W. Miller Pomeroy, Ohio.

PLUTO COAL CO. (THE)
Portland Mine; Drift; Pgh. No. 8 Seam, 54 to 66 in. thick.
PO—Rayland, O.; SP—Same; CTY—Jefferson; RR—W. & L. E.
PR—Chas. A. Miller.....Rayland, O.
GS—Chas. A. Miller, " "
PA—Chas. A. Miller, " "
MS—Chas A. Miller, " "
TR—D. C. Eaton, " "
EM—M. D. Gibson, " "
MM—W. W. Brenner, " "
S of H—1 Elec. loco and mules; track gauge, 42 in.
S of M—6 Elec. mach.
PP—1 Erie return tubular boiler, total 150 H. P., gen. unit, 250 volts D. C., 2 pumps.
EMP—120.
Sales Agent, D. C. Eaton, Rayland, O.

POCOCK COAL CO. (THE)
No. 4 Mine, Shaft, Massillon No. 1 Seam, 6 to 5 ft. thick.
PO—Massillon, O. SP—Same. CTY—Stark. RR—W. & L. E. Ry.
PR—J. F. Pocock.....Massillon, O.
TR—J. C. Haring ..... " "
GM—J. C. Haring ..... " "
PA—J. C. Haring ..... " "
MS—Wm. Kutz ..... " "
S of H—Mules.
S of M—5 elec. machines.
EMP—260. Last fiscal year output 74,000 tons.
New mine.

POMEROY FUEL CO.
Sold to J. H. Lama.

PORTSMOUTH REFRACTORIES CO. (THE)
Mines, Drift, Nos. 4 and 5 Seams, 4 to 4½ ft. thick.
PO—Firebrick, O. SP—Same. CTY—Lawrence. RR—B. & O. Ry.
PR—Wells A. Hutchins..Portsmouth, O.
TR—W. L. Hitchcock...Firebrick, O.
GM—W. L. Hitchcock... " "
GS—J. H. Poetker..... " "
PA—W. L. Hamilton.... " "
EM—A. C. Campbell.....Jackson, O.
S of H—Mules and gravity. Track gauge 36 in.
S of M—Hand.
PP—1 pump.
EMP—20. Annual output 9,000 tons.

POSTON CONS. COAL CO. (THE)
General Office, Athens, Ohio.
PR—C. L. Poston.....Athens, O.
TR—T. R. Biddle ..... " "
GM—L. D. Poston ..... " "
PA—L. D. Poston ..... " "
EM—R. A. Van Dyke, " "
GS—V. F. Cox, " "
MM—Wm. Campbell.....Millfield, O
EE—Henry Bailey and Herb Bailey, Millfield, O.
SM—J. F. Kiener .....Millfield, O.
Sales Agent, Wm. Harper, 906 Citizens' Bldg., Cleveland, O.

No. 6 Mine, Shaft, No. 6 Hocking Seam, 6 ft. thick.
PO—Millfield, O. SP—Same. CTY—Athens. RR—T. & O. C.
MS—John Brewer.....Millfield, O.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—4 Elec. mach.
PP—6 Erie return tubular boilers, total 900 H. P., 250 K. W., 250 volts D. C.
EMP—200. Last fiscal year output 100,000 tons.

No. 7 Mine; Slope; No. 7 Hocking or Bailey Run Seam, 54 in. thick.
No. 7 Hocking or Bailey Run Seam, 4½ ft. thick.
PO—Millfield, O. SP—Same. CTY—Athens. RR—T. & O. C.
MS—Reese West.....Millfield, O.
ft. 6 in.
S of M—5 elec. machines.
PP—2 Erie return tubular boilers, total 300 H. P., 150 K. W., 250 volts D. C.
EMP—180. Last fiscal year output 70,000 tons.

POWER COAL CO.
Power Mine, Drift, No. 6 Seam, 3 ft. 4 in. to 4 ft. 4 in. thick.
PO—Coshocton, O. SP—Same. CTY—Same. RR—W. & L. E.
GS—Wm. Power.....Coshocton, O.
PA—A. J. Power ..... " "
MS—A. J. Power .. ..
S of H—Mules. Track gauge 32 in.
S of M—Electric machines.
PP—250 volts D. C., 1 pump, purchase power.

PROGRESS COAL CO.
General Office, Wade Bldg., Cleveland, O.
Pauline No. 1 Mine.
PO—Akron, O.; SP—Bannock, O.; CTY—Belmont.
No report.

PROGRESSIVE COAL CO. (THE)
Morgan Mine, Drift, Pittsburg Seam No. 8, 5½ ft. thick.
PO—Bellaire, O. SP—Same. CTY—Belmont; RR—B. & O.
PR—M. T. Garrett.....Bellaire, O.
TR—R. W. Hall ..... " "
GM—R. W. Hall ..... " "
GS—R. W. Hall ..... " "
PA—R. W. Hall ..... " "
EM—A. J. Harbaugh.....Bellaire, O.
S of H—Mules. Track gauge 36 in.
S of M—1 elec. machine.
PP—2 pumps. Purchase power.
EMP—20. Last fiscal year output 11,336 tons.
Sales Agent, R. W. Hall, Bellaire, O.

PROSPECT HILL COAL CO.
Prospect Hill Nos. 1 and 2 Mines Drift and Slope, No. 6 and 7 Seams, 3 to 4 ft. thick.
PO—East Palestine, O. SP—Same. CTY—Columbiana. RR—P. F. W. & C. Ry.
PR—Alfred Hicks.....Pittsburgh, Pa.
TR—Alfred Hicks ..... " "
GM—L. W. Hicks .... " "
GS—Grant Hill ....East Palestine, O.
PA—Grant Hill .... " "
EM—C. E. Vaughn.. " "
S of H—Rope and mule. Track gauge 36 in.
S of M—Pick.
PP—1 return tubular boiler, 125 H. P., 2 pumps.

PROVIDENT COAL CO. (THE)
General Office, Cleveland, O.
PR—W. P. Murray ....Cleveland, O.
VP—G. D. Cameron..... " "
TR—E. P. Williams..... " "
GM—Frank Armstrong ... " "
PA—H. S. Pickands.....Cleveland, O.
GS—W. L. McDonald..St. Clairsville, O.
Sales agents, Pickands, Mathers & Co., Cleveland, O.

Provident Mine No. 1, Shaft, Pittsburg No. 8 Seam, 5 ft. 8 in. thick.
PO—St. Clairsville, O. SP—Provident, O. CTY—Belmont. RR—W. & L. E., Adina Branch.
S of H—Mules and 5 Jeffrey elec. loco. Track gauge 42 in.
S of M—18 elec. machines.
PP—2 water tube and 4 return tubular boilers, total 1,300 H. P., 3 gen. units, 2,300 volts A. C., 60 cycle and 250 volts D. C., 1 air compressor and 2 pumps.
EMP—427.

Provident Mine No. 2, Drift, Pittsburg No. 8 Seam, 5½ ft. thick.
PO—Fairpoint, O. SP—Same. CTY—Belmont. RR—B. & O., C. L. & W.
MS—W. L. McDonald..Fairpoint, O.
S of H—Mules and 3 Jeffrey elec. loco. Track gauge 42 in.
S of M—16 Jeffrey elec. machines.
PP—Power supplied by No. 1 mine. 1 air compressor and 2 pumps.
EMP—301. Mines idle in 1914.

PURITAN BRICK CO.
General Office, Detroit, Mich.
Puritan No. 6 Mine; Drift; Hocking No. 6 Seam, 46 to 50 in. thick.
PO—Hamden O.; SP—Same; CTY—Vinton; RR—H. V.
PR—Wm. L. Holmes....Detroit, Mich
TR—H. P. Harding, " "
GM—H. W. Holmes, " "
PA—H. W. Holmes, " "
CE—Prof. J. R. Allen, Ann Arbor, Mich.
MS—F. C. Morgan.....Wellston, O.
EE—G. M. Hicks.....Hamden, O.
S of H—1 Elec. loco and mules; track gauge, 42 in.
S of M—2 Elec. mach.
Continued on Next Page.

PP—2 Sterling water tube boilers, total 800 H. P., 2 gen. units, 250 and 550 volts D. C., 3 phase, 60 cycles.
EMP—25. Last fiscal year output, 15,-000 tons.
Sales Agent, J. W. Morrison, Detroit, Mich.

PURITAN COAL CO. (THE)
Puritan Mine, Shaft, No. 7 Seam, 8 to 5½ ft. thick.
PO—Cambridge, O. SP—Byesville, (CTY—Guernsey. RR—Penna lines, C. & M. Div.
PR—E. H. Mills.....Coshocton, O.
TR—L. B. Birney.....Cambridge, O.
GM—W. A. Lucas .... " "
GS—W. A. Oliver, " "
PA—W. A. Lucas ..... " "
CE—John W. Stewart... " "
EE—Marion Albright.....Byesville, O
S of H—Mules and 3 elec. loc Track gauge 42 in.
S of M—5 elec. machines.
PP—3 Union Iron Works return tubular boilers, total 450 H. P., 3 gen. units, 250 volts D. C., 4 pumps.
EMP—280. Last fiscal year output 163,266 tons.

PURSGLOVE-MAHER COAL CO. (THE)
General Office, Cleveland, Ohio.
PR—Joseph Pursglove ....Cleveland, O.
TR—Thos. K. Maher.... " "
GM—Thos. W. Pursglove, Bridgeport, O.
Sales Mgr., R. L. Criswell, Cleveland, O.

Heinlein Mine, Drift, Pittsburgh No. 8 Seam, 5½ ft. thick.
PO—Neff, O. SP—Same. CTY—Belmont. RR—B. & O. and W. & L. E.
MS—David Pursglove .....Neff, O.
SM—W. P. Hunt.....Neffs, O.
S of H—4 elec. loco. Track gauge 36 in.
S of M—8 elec. machines.
EMP—275. Annual output 324,863 tons.

Maher Mine, Slope, Pittsburgh No. 8 Seam, 5½ ft. thick.
PO—Glencoe, O. SP—Same. CTY—Belmont. RR—B. & O. R. R.
MS—Samuel Pursglove....Glencoe, O.
S of H—4 elec. loco. Track gauge 42 in.
S of M—7 elec. machines.
PP—3 water tube boilers, total 450 H. P., 2 pumps, 1 gen. unit, 250 volts.
EMP—210. Annual output 204,000 tons.

Pursglove Mine, Drift, Pittsburgh No. 8 Seam, 5½ to 6 ft. thick.
PO—Stewartsville, O. SP—Same. CTY—Belmont. RR—B. & O.
MS—Sam. Pursglove .....Glencoe, O.
S of H—3 elec. loco. Track gauge 42 in.
S of M—10 elec. machines.
PP—2 water tube boilers, total 390 H. P.
EMP—236. Annual output 236,000 tons.

Lydia Mine, Drift, Pittsburgh No. 8 Seam, 6 to 5½ ft. thick.
PO—Maynard, O. SP—Same. CTY—Belmont. RR—B. & O. R. R.
MS—T. W. Pursglove.....Bridgeport, O.
S of H—2 elec. loco. Track gauge 42 in.
S of M—10 elec. machines.
PP—2 water tube boilers, total 300 H. P.

QUINN COAL CO.
General Office, Minerton, O.
Murphy Mine; Drift, No. 4 Seam, 42 to 54 in. thick.
PO—Alice, O.; SP—Minertown, O.; CTY—Gallia; RR—H. V., River Div.
TR—Jas. J. Murphy.....Lancaster, O.
GM—Jas. J. Murphy, " "
PA—Jas. J. Murphy, " "
S of H—Mules and rope; track gauge 36 in.
MS—Jas. J. Murphy, " "
MM—John Reisinger.....Alice, O.
S of M—Hand.
Note—Not in operation for the past year.

RAIL & RIVER COAL CO.
General Office, Cleveland, O.
PR—W. R. Woodford....Cleveland, O.
TR—D. W. Miller, " "
GM—Walter S. Kelley.....Bellaire, O.
GS—Wm. Maloney, " "
PA—St. Clair Archer, " "
Sales Agency, Address the Company,

No. 1 Mine; Drift; Pgh. Seam, 60 to 70 in. thick.
PO—Bellaire, O.; SP—Same; CTY—Belmont; RR—P. R. R., Cleve. & Pgh. Div.

S of H—5 Elec. loco.; track gauge, 42 in.
S of M—14 Elec. mach.
PP—2 Keeler water tube boilers, total 800 H. P., 3 gen. units, 500 volts D. C., 2 pumps.
EMP—450. Last fiscal year output, 2,-000 tons daily.

No. 2 Mine; Slope; Pgh. Seam, 60 to 72 in. thick.
PO—Bellaire, O.; SP—Same; CTY—Belmont; RR—P. R. R., Cleve. & Pgh Div.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—10 Elec. mach.
PP—Power supplied from No. 1 Mine, 2 pumps.
EMP—350. Last fiscal year output, 1,-500 tons daily.

No. 3 Mine; Slope; Pgh. Seam, 60 to 72 in. thick.
PO—Bellaire, O.; SP—Aults, O.; CTY—Belmont; RR—B. & O., Main Line.
S of H—3 Elec. loco.; track gauge, 42 in.
S of M—11 Elec. mach.
PP—1 W. T. Geary water tube, 2 W. T. Geary return tubular boilers, total 560 H. P.
EMP—250. Last fiscal year output, 2,-000 tons daily.

No. 6 Mine; Drift; Pgh. Seam, 60 to 72 in. thick.
PO—Bellaire, O.; SP—Same and McLainsville, O.; CTY—Belmont; RR—B. & O., Main Line.
S of H—2 Elec. loco. and mules; track gauge, 42 in.
S of M—10 Elec mach.
PP—1 W. T. Geary water tube, 2 W. T. Geary return tubular boilers, total 560 H. P., 2 gen. units, 500 volts D. C.
EMP—350. Last fiscal year output, 2,-000 tons daily.

R. MINING CO., THE
PR—John P. Jones.....Akron, O.
SECY—C. W. Wickline, " "
No report.

RAYLAND COAL CO.
Leased the property to Pluto Coal Co.

REDBUD COAL CO.
Redbud Mine, Drift, No. 6 Seam, 3 to 4 ft. thick.
PO—Cannelville, O. SP—Same. CTY—Muskingum. RR—Z. & W.
TR—W. H. Blaney ...Cannelville, O.
GM—W. H. Blaney ... " "
PA—W. H. Blaney .... " "
GS—James Rush ..... " "
S of H—Rope. Track gauge 36 in.
S of M—Hand. Shooting.
PP—1 boiler, 125 H. P.
EMP—30. Annual output 30,000 tons.

REESE BROS.
Beech Hollow Mine, Drift, No. 3 Seam, 2 ft. 8 in. to 3 ft. 8 in. thick.
PO—Salem, O. CTY—Columbiana.
PR—F. G. Reese .....Salem, O.
GM—F. G. Reese ..... " "
MS—Thos. Reese ..... " "
S of H—Mules & rope. Track gauge 30 in.
S of M—Hand.
PP—2 water tube boilers, total 100 H. P., 1 pump.
EMP—12. Last fiscal year output 8,000 tons.

REEVES COAL CO.
PR—C. C. Fernsell, New Philadelphia, O.
TR—C. C. Fernsell.. " "
GM—C. G. Knisely .. " "
PA—C. G. Knisely .. " "
EE—Peter Pollock .... " "
Sales agent, C. G. Knisely, New Philadelphia, O.

Reeves Mine No. 2, Drift, No. 6 Seam, 3 ft. 10 inches to 4½ ft. thick.
PO—New Philadelphia, O. SP—Same. CTY—Tuscarawas. RR—Penna R. R., C. & P. Div.
MS—E. Phillips ..New Philadelphia, O.
S of H—Mules and 3 elec. loco. Track gauge 42 in.
S of M—6 elec. and 21 compressed air machines.
PP—1 water tube and 1 return tubular boiler, total 500 H. P., 1 gen. unit, 250 volts D. C., 1 air compressor and 4 pumps.
EMP—225. Last fiscal year output 108,000 tons.

Reeves Mine No. 1, Drift, No. 6 Seam, 3 ft. 10 inches to 4½ ft. thick.
PO—New Philadelphia, O. SP—Same. CTY—Tuscarawas. RR—Penna R. R., C. & P. Div.
MS—Geo. Dean....New Philadelphia, O.
S of H—Mules and 3 elec. loco. Track gauge 36 in.
S of M—Pick.
EMP—100. Last fiscal year output 47,700 tons.

RICE, W. P. MINING CO. (THE)
General Office, Dayton, O.
No. 1 Mine; Shaft, No. 7 A Seam, 50 in. thick.
PO—Glouster, O.; SP—Palos, O.; CTY—Athens; RR—T. & O. C.
PR—W. P. Rice, ...Dayton, O.
GM—W. P. Rice, " "
PA W. P. Rice, " "
TR—J. W. Rice, " "
GS—F. L. Galbraith, ..Glouster, O.
MS—Fred Jonas, " "
CE—Jos. Richards, " "
S of H—1 Elec. Loco.
S of M—2 Elec. mach.
PP—1 Return tubular boiler, 150 H. P., 1 gen. unit 100 K.W., 250 volts D. C.
EMP—100.
Sales Agents, J. W. Rice, Dayton, O.

RIVERVIEW COAL & MNG. CO.
Riverview Mine, Drift.
PO—Cheshire, O.; SP—Silver Run, O.; CTY—Gallia RR—H. V.
PR—W. E. Williams.....Rutland, O.
GM—W. E. Williams.....Rutland, O.
TR—W. A. Brennan.....Middleport, O.
MS—John True.....Middleport, O.
CE—A. Sheldon .....Middleport, O.
SCO—Riverview Supply Co. Buyer, E. Herman.
S of H—1 Elec. loc.
S of M—4 Elec. mach.
PP—1 pump, 1 return tubular boiler, 150 H. P., 1 gen. unit 250 volts D. C.
EMP—20.

ROBBINS COAL CO., C. (THE)
Robbins Mine, Drift, No. 6 Hocking Seam, 4 to 7 ft. thick.
PO—Nelsonville. SP—Same. CTY—Athens. RR—H. V. R. R.
PR—John C. Baird.....Nelsonville, O.
TR—C. L. Baird.... " "
GM—John C. Baird.. " "
PA—John C. Baird.. " "
GS—Wm. Burnell .... " "
S of H—3 elec. loco. Track gauge 42 in.
S of M—4 elec. machines.
PP—1 gen. unit, 2,300 volts A. C., 3 phase, 60 cycle, power purchased.
EMP—105. Annual output 88,167 tons.
Sales agents, E. A. Cole & Co., Columbus, Ohio.

ROBINSON-GRAVES SEWER PIPE CO.
Graves Mine, Drift, No. 6 Seam, 4 to 4½ ft. thick.
PO—Uhrichsville, O. SP—Same. CTY—Tuscarawas. RR—B. & O.
PR—Andrew Robinson....Uhrichsville, O.
GM—A. Robinson .... " "
PA—A. Robinson .... " "
TR—C. L. Graves.....Uhrichsville, O.
MS—Wm. Tanzie, " "
CE—Geo. Arnold..New Philadelphia, O.
S of H—Mules. Track gauge 33 in.
S of M—Hand.
PP—2 boilers, total 300 H. P.
EMP—20. Last fiscal year output 16,-00 tons.
Sales agent, A. Robinson.

ROBY COAL CO (THE).
General Office, Cleveland, O.
Somers Nos. 1 and 2 Mines; Drift; Pgh. No. 8 Seam.
PO—Adena, O.; SP—Same; CTY—Jefferson; RR—W. & L. E.
PR—C. W. Somers.....Cleveland, O.
GM—C. W. Somers, " "
TR—Geo. P. Steele, " "
PA—G. E. Keidel, " "
GS—W. L. Moke,.....Adena, O.
EM—Wm. Hibbs—.....Scio, "
SCO—(1) Enterprise Supply Co.,, Adena, O.
(2) H. Walker's Store, " "
S of H—7 Elec loco.
S of M—38 Elec. mach.
PP—5 Erie, 5 Atlas, water tube boilers, total 1,500 H. P., 4 gen. units, 250 volts D. C., 8 pumps.
EMP—1,100. Output for three months, 180,000 tons.

ROCK RUN COAL CO.
Rock Run Mine; Drift; No. 6 Seam, 3 1-2 to 4 ft. thick.
PO—Coshocton, O.; SP—Some; CTY—Coshocton; RR—W. & L. E., Main Line.
PR—J. A. Hanlon, ...Coshocton, O.
TR—J. A. Hanlon, " "
PA—J. A. Hanlon, " "
S of H—Mules; track gauge 30 in.
S of M—Hand.
EMP—25. Capacity 9,000 tons in seven months.

ROSE HILL COAL CO.
See Pan-American Coal Co.

ROYAL GOSHEN COAL CO. (THE)
Now Midvale Coal Co.

RUSSELL COAL & MNG. CO. (THE)
General Office, Cleveland, Ohio.
Russell Mine, Drift, Pittsburgh No. 8 Seam, 5 ft. 4 in. thick.
PO—Tiltonsville, O. SP—Same. CTY—Jefferson. RR—C. & P. Div. Penna Co.
PR—A. M. McKitterick.
TR—G. C. McKitterick.
GM—G. C. McKitterick.
GS—G. C. McKitterick.
PA—G. C. McKitterick.
CE—D. A. Elkin .....Bellaire, O.
EE—C. M. Johnson....Tiltonsville, O.
MS—Seth Williams .... " "
S of H—2 elec. locos. Track gauge 40 in.
S of M—6 elec. machines.
EMP—140. Buy power.

RUSSELL RUN COAL CO.
Little Monkey Mine, Drift, No. 6 Seam, 7 ft. thick.
PO—Carbon Hill, O. SP—Same. CTY—Hocking. RR—H. V.
PR—C. W. H. Wright.....Logan, O.
TR—F. E. Green.....Carbon Hill, O.
GM—W. B. Bailey.... " "
MS—W. B. Bailey..... " "
S of H—Mules. Track gauge 3½ ft.
S of M—1 elec. machine.
PP—Purchased power.
Sales agent, J. F. Sweazy, Carbon Hill, O.

ST. CLAIR COAL CO. (THE)
General Office, 1414 Rockefeller Bldg., Cleveland, O.
St. Clair No. 1 Mine, Shaft No. 8 Pittsburgh Seam, 4 ft. 8 in. to 5 ft. thick.
PO—Flushing, O., SP—Clelland Mills, CTY—Belmont. RR—B. & O., C. L. & W.
PR—C. E. Maurer.....Ravenna, O.
TR—C. E. Sullivan....Cleveland, O.
EM—Samuel Allen, " "
PA—C. E. Maurer.....Ravenna, O.
MS—Fred Hornickle.....Flushing, O.
S of H—2 Elec. loco., Standard gauge.
S of M—9 Elec. mach.
PP—3 Water tube boilers, 1 pump, 2 gen. units D. C. voltage.
EMP—220. Annual output 190,000 tons.
Sales Agent, S. B. Coolidge, Cleveland, Ohio.

SALEM MINING CO.
Salem Mine, Drift; No. 3 Seam, 42 in. thick.
PO—Salem, O.; SP—Salem Mines, O.; CTY—Columbiana; RR—Y. & O.
PR—Chas. Estep.....Salem, O.
PA—Chas. Estep, " "
VP—A. M. Bloom...Scalp Level, Pa.
TR—J. E. Reese, " "
GM—J. H. Giffin.....Salem, O.
MS—Wm. Watkins, " "
EM—C. E. Vaughn....E. Palestine, O.
S of H—2 Elec. locos.; track gauge 38 in.
S of M—3 elec. mach.
PP—1 Return tubular boiler, 150 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—65. Last fiscal year output 28,-248 tons.
Sales Agent, J. H. Giffin, Salem, O.

SALTILLO COAL CO.
Saltillo Mine, Drift, No. 6 Seam 42 in. thick.
PO—New Lexington, O.; SP—Saltillo; CTY—Perry; RR—Zanesville & Western.
MS—L. S. McNeal..New Lexington, O
S of H—1 Elec. loco.; track gauge 36 in.
S of M—2 Elec. mach.
PP—Return tubular boilers, total 150 H. P., 250 volts D. C.

SAND RUN COAL CO.
Drift; Seam 7 ft. thick.
PO—Carbon Hill, O.; SP—Same; CTY—Hocking; RR—H. V.
PR—C. E. Striblin....Carbon Hill, O.
TR—W. H. Bartol.....Nelsonville, O.
PA—W. H. Bartol, " "
MS—Chas. A. Green....Carbon Hill, O.
S of H—Horses; track gauge 42 in.
S of M—1 Elec. mach.
PP—1 pump; power purchased.
EMP—18. Last fiscal year output 20,-000 tons.

SCHICK, M. J. & CO.
Succeeded by Schick Co-Operative Coal Co.

SCHICK CO-OPERATIVE COAL CO. (THE).
Schick's Mine; Drift; No. 8 Seam.
PO—Bellaire, O.; SP—Same; CTY—Belmont; RR—B. & O.
PR—M. J. Schick.....Bellaire, O.
MS—M. J. Schick, " "
TR—John A. Schick, " "
EM—A. J. Harbaugh....Shadyside, O.
S of H—Elec. loco.
S of M—Elec. mach.
PP—Boiler, 150 H. P., gen units, 250 volts D. C.
EMP—125.
Successors to M. J. Schick & Co.

SCHULER, J. F. & SONS.
General Office, Sharpsbury, O.

Continued on Next Page.

SCHULER, J.F. & SONS—Continued.
PR—J. F. Schuler.....Sharpsbury, O.
TR —J. F. Schuler, " "
GM—W. F. Schuler, " "
SM—S. A. Schuler, " "
MM—Wm. White.....Broadwell, O.

Selley Mine; Drift; Seam 84 in. thick.
PO—Sharpsbury, O.; SP Same; CTY—Athens; RR—M. C. & C.
MS—E. J. Schuler.....Sharpsbury, O.
S of H—Horses.
S of M—1 Elec. mach.
PP—Jeffrey boilers, total 60 H. P., 1 gen. unit 250 volts D. C.
EMP —15.

Schuler No. 1 Mine; Slope; Pittsburgh No. 8 Seam, 48 to 49 in. thick.
PO—Broadwell, O.; SP Same; CTY—Athens; RR—M. C. & C.
PR—J. F. Schuler, ...Broadwell, O.
TR—J. F. Schuler, " "
GM—W. F. Schuler, " "
MS—W. F. Schuler, " "
MM—William White, " "
S of H—1 Steam loco.; track gauge 41 in.
S of M—1 Elec. mach.
PP—1 Return tubular boiler, 1 gen. unit 250 volts D. C.
EMP—14. Last fiscal year output 5,000 tons.

SCOTT COAL CO.
PO—New Philadelphia, O.; SP—Same; CTY—Tuscarawas; RR—B. & O., Beaver Dam Br.
MS—Mr. Lechlider..New Philadelphia, O.
Output handled by West Virginia-Ohio Coal Co.
Formerly "B" Mine of Goshen Coal Co.

SHAWNEE FLASH BRICK CO.
PO—Columbus, O.
Mine coal for own use only.

SEDALIA MINING CO.
PO—Jacksonville, O. No report.

SHEETS COAL CO.
Sheets Mine, Drift, No. 8 Pittsburgh Seam, 5 3-4 ft. thick.
PO—Martins Ferry, Ohio, SP—Same; CTY—Belmont. RR—P. R. R. & B. & O.
GM—James Ralston..Martins Ferry, O.
GS—James Ralston, " "
PA—James Ralston, " "
S of H—1 Elec. loco.; track gauge 34 in.
S of M—2 Elec. mach.
PP 2 pumps.
EMP—9. Annual output 10,000 tons.

SHERMAN COAL CO.
PO—Middleport, O.; CTY—Meigs.
No report.

SIMONS, A. & SON.
Chestnut Ridge Mine No. 3; Drift, No. 5 Seam, 42 to 48 in. thick.
PO—Redfield, O.; SP—Saltillo, O.; CTY—Perry; RR—Z. & W.
PR—A. Simons.....Redfield, O.
GM—A. Simons, " "
SM—A. Simons, " "
EM—Clem Pettit, " "
EE—J. F. Conaway, " "
S of H—1 Elec. loco.
S of M—4 Elec. mach.
PP 1 return tubular boiler.
EMP—60. Last fiscal year output 24,721 tons.

SINES BROS. & CO.
PO New Straitsville, O.
Mine coal for their own use.

SKIDMORE COAL CO. (THE).
Noble Summit Mine; Drift; A Eight Seam, 58 to 64 in. thick.
PO Rutland, O.; SP Same; CTY—Meigs; RR K. & M.
PR —Waldo Chute.....Rutland, O.
GM Waldo Chute, " "
SM Waldo Chute, " "
TR —W. H. Bartoe, " "
MS —C. E. Bryan, " "
S of H—Mules.
S of M—1 Elec mach.
PP 1 Gas engine, 1 pump.

SLOAN, C.A., COAL CO.
Hurd No. 2, Shaft, No. 2 Seam, 36 in. thick.
PO—Jackson, O., SP—Davisville, O., CTY—Jackson; RR D. T. & I. and H. V.
PR —C. A. Sloan.....Jackson, O.
PA—C. A. Sloan, " "
MS—C. A. Sloan, " "
EM Thos. Lloyd, " "
S of H—Mules; track gauge 38 in.
S of M—Hand.
PP—1 Return tubular boiler 45 H. P., 1 pump.
EMP—14. Annual output 6,500 tons.

SOUTH PALMYRA COAL CO.
Sold to Hutson Coal Co.

STANDARD HOCKING COAL CO.
General Office, Chicago, Ill.
Standard Hocking Mine, Drift, No. 6 Seam 3½ ft. thick.
PO—Crooksville, O.; SP—Same; CTY—Perry; RR—Lenna.
PR—Jos. P. Rend.....Chicago, Ill.
GM—Jos. P. Rend, " "
MS—N. B. Snell.....Crooksville, O.
MM—John Smith, " "
EM—T. C. Connar....Zanesville, O.
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—10 Elec. mach.
PP—2 Erie water tube boilers, total 300 H. P., 2 gen. units, 250 volts, D. C., 2 pumps.
EMP—190. Last fiscal year output 88,000 tons.

STARR-HOCKING COAL CO., THE
Starr Nos. 1 and 2, Drift; No. 6 Seam; 3½ to 4 ft. 10 in. thick; operate washery.
PO—Starr, Ohio; SP—Same; CTY—Hocking; RR—H. V., River Div.
PR—E. C. Hargrave..Bay City, Mich.
GM—E. C. Hargrave, " "
TR—H. C. Irvin.....Starr, O.
MS—C. E. Haskins....Coshocton, O.
PA—C. E. Haskins, " "
CE—C. C. Callender....Columbus, O.
EM—C. C. Callender, " "
MM—H. B. Potts .....Starr, O.
EE—Geo. Goodlive, " "
SCO—Coonville Store Co., Buyer C. B. Beverage, Starr, Ohio.
S of H—Mules and 2 Morgan-Gardner elec. loco., track gauge 42 in.
S of M—8 elec. mach.
PP—3 Return tubular boilers total 450 H. P., 2 gen. units, 250 volts, D. C.; 3 pumps.
EMP—190. Last fiscal year output 89,000 tons.
Sales Agent, Central West Coal Co., Columbus, O.

STERLING COAL CO., Ltd.
General Office, Cleveland, Ohio.
2 Mines in Ohio and 1 in West Va.
PR—C. B. McNaught..Toronto, Can.
GM—H. D. Hileman....Cleveland, O.
PA—F. M. Kirk, " "
EE—E. B. McNichols...Salineville, O.

Sterling Mine, Drift, No. 7 A or Strip vein 3 ft. thick.
PO—Salinville, O., SP—Same; CTY—Columbiana; RR— P. R. R., C. & P. Div.
MS—M. Smith.....Salineville, O.
S of H—5 Elec. loco.; track gauge 42 in.
S of M—12 Elec. mach.
PP—4 Return tubular boilers, total 550 H. P., 3 gen. units, 250 volts D. C.
EMP—250. Annual output 169,000 tons.

Delmore Mine, Slope, No. 3 Seam, 3½ ft. thick.
PO—Leetonia, O., SP—Same; CTY—Columbiana. RR—Erie.
MS—Daniel McGrath,.. Leetonia, O.
S of H—2 Elec. loco.; track gauge 39 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, 300 H. P., 1 gen. unit 250 volts, D. C.
EMP—90. Last fiscal year output 75,000 tons.

STEUBENVILLE COAL & MINING CO., THE
"High Shaft" Mine, Shaft, No. 6 O. G. S. or Freeport Seam, 4 to 5 ft. thick.
PO—Steubenville, O., SP—Same, CTY—Jefferson.
PR—T. J. Sherrard....Wellsburg, W.Va.
TR—T. J. Sherrard, " "
GM—F. C. Chambers....Steubenville, O.
PA—F. C. Chambers, " "
MS—E. Jones, " "
S of H—2 Elec. loco., track gauge 28½ in.
S of M—4 Elec. mach.
PP—2 return tubular Union Iron Works boilers, total 250 H. P., 2 gen. units, 300 volts D. C.
EMP 75. 3 Bee Hive coke ovens. Last fiscal year output 40,000 tons.

STILLWATER COAL MINING CO.
General Office, Rockefeller Bldg., Cleveland, O.
Shaft Mine; No. 6 Up. Kittanning Seam, 44 to 70 in. thick.
PO—Tippecanoe, O.; SP Same; CTY—Harrison; RR—C. L. & W., B. & O.
PR —H. P. Arnt.....Cleveland, O.
TR—H. P. Arnt, " "
GM —H. P. Arnt, " "
PA —H. P. Arnt, " "
GS—Pitt Townsend, " "
MS R. E. Roush.....Tippecanoe, O.
EM Robert P. Millard, " "
MM—Mr. Miller, " "
EE—F. Freeman, " "
S of H—4 Elec. loco.; track gauge, 36 in.
S of M—5 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., gen. unit, 250 volts D. C., and 1 pump. (Will purchase power beginning July 1st, 1915).
EMP—150. Output, 600 tons daily.

STORM-LOOMIS COAL CO., THE
General Office, Cleveland, O.
Kirk Mine, Drift, No. 7 Seam, 3 to 4 ft. thick.
PO—Salineville, O., SP—Same; CTY—Columbiana; RR—C. & P.
PR—F. C. Carroll.....Cleveland, O.
TR—Fred Storm, " "
GM—D. P. Loomis.....Canton, O.
GS—A. A. Smith.....Salineville, O.
PA—A. A. Smith, " "
MS—S. Leggett.....Salineville, O.
CE—Geo. Arnold..New Philadelphia, O.
S of H—3 Elec. loco.
S of M—5 Elec. mach.
EMP—100. Annual output 60,000 tons.

SUGAR HILL COAL CO., THE
Sugar Hill Mine, Drift, Pittsburgh Seam No. 8, 5 ft. thick.
PO—Steubenville, O., CTY—Jefferson.
PR—Elmer H. King, Steubenville, O.
GS—Elmer H. King, " "
PA—Elmer H. King, " "
S of H—Mules, track gauge 34 in.
S of M—Hand.
EMP—8. Annual output 5,647 tons.

SUN COAL MINING CO.
Black Pearl Nos. 1 and 2 Mines, Drift, No. 2 Seam.
PO—Jackson, O.; SP—Same; CTY—Same. RR—D. T. & I.
GM—A. L. Combs.....Jackson, O.
PA—A. L. Combs, " "
MS—Sherman Walker, " "
S of H—Mules.
S of M—Hand.
EMP—50. ?

SUNDAY CREEK COAL CO.
General Office, Columbus, O.
20 Mines in Ohio, 7 in W. Va.
PR—J. S. Jones.....Columbus, O.
TR—H. J. Reese, " "
GM—J. H. Windsor, " "
PA—F. E. Falk, " "
EM—G. H. Dukes, " "
EE—O. S. Newton, " "
SM—G. E. Tetirick, " "
Sales Agent, P. A. Conn, Columbus, O.

Jobs Nos 2 Mine, Drift; No. 6 Seam, 36 to 84 in. thick.
PO—Jobs, O.; SP—Same; CTY—Hocking; RR—H. V.
MS—Frank Murphy....Nelsonville, O.
S of H—Rope, mules and Elec. loco.; track gauge 42 in.
S of M—6 Elec. and Comp. air mach.
PP—2 Water tube and 3 return tubular boilers, gen. units 250 volts D. C., 1 air compressor and 3 pumps.
EMP—343.

No. 207 Mine; Drifts; No. 6 Seam, 48 to 72 in. thick.
PO—Nelsonville, O.; SP—Same; CTY—Athens; RR—H. V.
MS—Thos. Burns.....Nelsonville, O.
S of H—2 Elec. and 1 Steam loco., and mules; track gauge 42 in.
S of M—7 Elec. mach. and hand.
PP—5 boilers, total 750 H. P., gen. units 250 volts D. C., 5 pumps.
EMP—267.

No. 10 X. Mine; Slope; No. 6 Seam, 5½ ft. thick.
PO—Orbiston, O.; SP—Same, CTY—Hocking; RR—H. V.
S of H—Elec. loco. and rope.
S of M—Elec. mach.
EMP—228.

No. 10 Mine; Shaft; No. 6 Seam, 66 in. thick.
PO—Mortonville, O.; SP—Same; CTY—Athens; RR—T. V. O. C.
MS Walter Hayden.....Mortonville, O.
S of H—3 Elec. loco. and mules; track gauge 36 in.
S of M—8 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 3 gen. units 250 volts D. C., and 6 pumps.
EMP 228.

No. 201 Mine; Shaft; No. 6 Seam, 5½ ft. thick.
PO—Floodwood, O.; SP—Same; CTY—Athens; RR —H. V.
Dist Supt—Harry Kelley, Nelsonville O.
S of H—Elec. loco.
S of M—Elec. mach. and hand.
PP—3 boilers, total 450 H. P., gen. unit 250 volts D. C.
EMP—80.

No. 204 Mine; Drift; No. 6 Seam, 5½ ft. thick.
SP—Kimberly, O.; CTY—Athens; RR—H. V.
Dist Supt—Harry Kelley..Nelsonville O.
S of H—Elec. loco.
S of M—Elec. mach. and hand.
PP—boilers, each 150 H. P., gen. units 250 volts D. C.
EMP—157.

No. 209 Mine; Shaft; No. 6 Seam, 36 to 72 in. thick.
PO—Poston, O.; SP—Same; CTY—Athens. RR—H. V.
Dist. Supt—T. E. Roan.....Athens, O.
S of H—Elec. loco. and horses; track gauge 42 in.
S of M—7 Elec. mach.
PP—2 boilers, total 300 H. P., gen. unit 250 volts D. C., 2 pumps.
EMP—92.

No. 211 Mine; Shaft; No. 6 Seam, 36 to 72 in. thick.
PO—Poston, O.; SP—Same; CTY—Athens; RR—H. C.
MS—Wm. Pritchard.....Poston, O.
S of H—3 Elec. loco. and horses; track gauge 42 in.
S of M—8 Elec. mach.
PP—5 Return tubular boilers, total 750 H. P., gen. units 250 volts D. C., and 5 pumps.
EMP—312.

No. 254 Mine; Shaft; No. 6 Seam, 60 in. thick.
PO—Jacksonville, O.; SP—Same; CTY—Athens; RR—T. & O. C.
MS—John McDonald.....Glouster, O.
S of H—Mules, rope and 1 Elec loco.; track gauge 36 in.
S of M—7 Elec. mach.
PP—3 boilers, total 450 H. P., gen. unit 250 volts D. C., and 4 pumps.
EMP—262.

No. 255 Mine; Shaft; No. 6 Seam, 60 in. thick.
PO—Modoc, O.; SP—Same; CTY—Athens; RR—T. & O. C.
MS—Harry Colley.....Modoc, O.
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—7 Elec. mach.
PP—3 boilers, total 450 H. P., gen. unit 250 volts D. C., and 4 pumps.
EMP—292.

No. 256 Mine; Shaft; No. 6 Seam, 60 to 72 in. thick.
PO—Glouster, O.; SP—Same; CTY—Athens; RR—T. & O. C.
Dist. Supt—D. H. Williams..Glouster, O.
MS—Harry Cunningham, " "
S of H—Mules and 3 Elec. loco.; track gauge 36 in.
S of M—11 Elec. mach.
PP—4 boilers, total 600 H. P., 2 gen. units 250 volts D. C., 7 pumps.
EMP—375.

No. 26 Mine; Shaft; No. 6 Seam, 72 in. thick.
PO—Hollister, O.; SP—Same; CTY—Athens; RR—T. & O. C.
Dist Supt—D. H. Williams..Glouster O.
MS—John Collins.....Hollister, O.
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—7 Elec. mach.
PP—2 Return tubular boilers, toal 300 H. P., 2 gen. units 250 volts D. C. and 6 pumps.
EMP—256.

No. 267 Mine; Slope; No. 6 Seam, 48 to 72 in. thick.
PO—Hunterton, O.; SP—Same; CTY—Athens; RR—T. & O. C.
Dist. Supt—D. H. Williams..Glouster, O.
MS—John Yaw.....Hunterton, O.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—7 Elec. mach.
PP—3 boilers, total 450 H. P., gen. units 250 volts D. C., and 4 pumps.
EMP—321.

No. 275 Mine; Shaft; No. 6 Seam, 5½ ft. thick.
PO—Chauncey, O.; SP—Same; CTY—Athens; RR —K. & M.
Dist Supt—Field Scott.....Athens, O.
MS—Wm. Collins.....Chauncey, O.
S of H—Elec. loco.
S of M—Elec.
PP—3 boilers, total 395 H. P.; gen. units 250 volts D. C.
EMP—204.

No. 281 Mine; Shaft; No. 6 Seam, 60 in. thick.
PO—Modoc, O.; SP—Same; CTY—Athens; RR—T. & O. C.
MS—Carl Fierce.....Modoc, O.
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—8 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units 250 volts D. C. and 7 pumps.
EMP —314.

No. 9 Mine; Slope; No. 6 Seam, 60 in. thick.
Continued on Next Page.

PO—Carrington, O.; SP—Same; CTY—Perry; RR—Z. & W.
MS—John Wile.....Carrington, O.
S of H—Elec. loco. and horses; track gauge 42 in.
S of M—6 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units 250 volts D. C. and 3 pumps.
EMP—223.

No. 301 Mine; Shaft; No. 6 Seam, 96 to 120 in. thick.
PO—Congo, O.; SP—Same; CTY—Perry; RR—Z. & W.
MS—J. J. Murray.....Congo, O.
S of H—3 Elec. loco. and mules; track gauge 42 in.
S of M—10 Elec. mach.
PP—4 boilers, total 600 H. P., gen. units 250 volts D. C. and 7 pumps.
EMP—391.

No. 302 Mine; Shaft; No. 6 Seam, 96 to 120 in. thick.
PO—Congo, O.; SP—Same; CTY—Perry; RR—Z. & W.
MS—A. Penman.....Congo, O.
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—Boiler, 150 H. P., gen. units 250 volts D. C. and 2 pumps.
EMP—356.

No. 268 Mine; Slope; No. 6 Seam, 48 to 120 in. thick.
PO—Rendville O. SP—Same. CTY—Perry. RR—T. & O. C.
MS—Andrew Wilson.....Corning, O.
S of H—Elec. loco. and mules.; track gauge 42 in.
S of M—7 Elec. mach.
PP—3 Boilers, total 450 H. P., gen. units 250 volts D. C. and 2 pumps.
EMP—318.

No. 204 Mine.
PO—Kimberly, O. SP—Same. CTY—Athens. RR—H. V.
DS—Harry Kelley, .. Nelsonville, O.
MS—J. Hilton.

Nos. 401 and 402 Mines; Shaft; No. 6 Seam, 40 in. thick.
PO—San Toy, O.; SP—Same; CTY—Perry; RR—B. & O., San Toy Br.
MS—E. E. Fillmore.....San Toy, O.
S of H—13 Elec. loco.; track gauge 42 in.
S of M—22 Elec. mach.
PP—8 Boilers, total 1,200 H. P., gen. unit, 250 volts D. C., 6 pumps.
EMP—350.

SUPERIOR COLLIERY CO.
Nos. 1, 3, 9, 10, 11 and 12 Mines, Shafts, slope, drift.
PO—Wellston, O. SP—Same. CTY—Jackson. RR—B. & O. and D. T. & I., and C. H. & D.
VP—U. S. Morris, ... Wellston, O.
GM—U. S. Morris, " "
PA—U. S. Morris, " "
EM—Edward Kelly, " "
GS—A. J. Laverty, " "
SB—R. M. Brohard, " "
S of H—Elec. loco. and mules.
S of M—Hand and elec machines.
PP—Gen. units, D. C.
EMP—700.

SUPERIOR PORTLAND CEMENT CO.
Receiver, Guy W. Mallon, Union Central Life Bldg., Cincinnati, O.
Drift Mine, No. 5 Seam, 24 to 48 in. thick.
PO—Superior, O.; SP—Same; CTY—Lawrence; RR—D. T. & I.
GS—E. C. Switzer.....Superior, O.
MS—M. L. Cocke, " "
S of H—Mules.
S of M—Hand.
Last fiscal year output, 5,000 ons.

TAGGART COAL CO.
See Barton Coal Co.

THOMAS COAL CO
Thomas Mine, Shaft, No. 8 Seam, 4½ ft. thick.
PO—Racine, O.; SP—Pomeroy; CTY—Meigs; RR—O. R. E. & Power Co.
PR—D. Thomas.....Racine, O.
TR—D. Thomas, " "
GS—D. Thomas, " "
GM—T. W. Lawson, " "
PA—T. W. Lawson, " "
EM—E. Kravolsky.....Pomeroy, O.
EE—James Mathewson.....Racine, O.
S of H—1 Elec. loco. and mules; track gauge 38 in.
S of M—4 Elec. mach.
PP—2 Boilers, 1 gen. unit, 250 volts D. C., 1 pump.
EMP—70. Last fiscal year output 7,000 tons.
Sales Agent, J. W. Thomas, Racine, O.

TROLL COAL MINING CO.
Troll's Nos. 1, 2 and 4 Mines; Drifts; PittsburghNo. 8 Seam, 66 in. thick.
PO—Maynard, O.; SP—Trolls, O.;; CTY—Belmont; RR—W. & L. E., Adena Branch.
PR—C. W. Troll.....St. Clairsville, O.
GM—C. W. Troll. " "
TR—H. W. Errett. " "
PA—Jesse S. Troll, " "
MS—Jesse S. Troll, " "
S of H—7 Elec. loco.; track gauge 42 in.
S of M—22 Elec. mach.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units 250 volts D. C.
EMP—642.

TROPIC MINING CO., (THE)
General Office, Toledo, O.
Tropic Mine, Slope, Hocking No. 6 Seam, 4½ ft. thick.
PO—Rose Farm, P. O., O., SP—Tropic, CTY—Morgan. RR—Z & W.
PR—Geo. M. Jones,.....Toledo, O.
TR—T. B. Earl, " "
PA—T. B. Earl, " "
MS—C. E. Spring..Rose Farm P.O.,O.
S of H—3 Elec. loco. Track gauge 36 in.
S of M—10 Elec. machines.
PP—4 return tubular boilers, total 600 H. P., 2 gen. units, 250 volts D. C., 4 pumps.
EMP—230. Last fiscal year output 200,000 tons. Sales Agents, The Geo. M. Jones Co., Toledo, Ohio.

TWENTIETH CENTURY COAL CO.
See Maple-Gallia Coal Co., Columbus, O.

TWIN-ADA COAL CO. (THE)
Twin-Ada Mine; Shaft; No. 2 Seam, 36 to 48 in. thick.
PO—Coalton, O.; SP—Glen Roy, O.; CTY—Jackson. RR—D. T. & I.
PR—Joseph McGhee.....Coalton, O.
PA—Chas. McGhee, " "
TR—J. C. Rowe.....Coalton, O.
GM—Wm. Harper, " "
MS—Wm. Harper, " "
S of H—Mules and rope.
S of M—Hand.
PP—2 Return tubular boilers, total 250 H. P., 3 pumps.

UNITED STATES COAL CO. (THE)
General Office, Cleveland, Ohio.
PR—R. R. Rhodes.....Cleveland, O.
TR—W. C. Rhodes " "
CM—H. E. Willard, " "
PA—F. S. Deal, " "
SCO—The Bradley Supply Co., Bradley, O. Buyer, F. S. Deal, Cleveland, O.

Crow Hollow Mine, Drift, No. 8 Pittsburgh Seam, 5 ft. thick.
PO—Bradley, O. SP—Dillonvale, O. CTY—Jefferson. RR—W. & L. E. and L. S. & M. S. Ry.
S of H—Electric.
S of M—Electric.
PP—500 volts D. C.

Plum Run Mine, Drift, No. 8 Pittsburgh Seam, 5 ft. thick.
PO—Rhodesdale, O. SP—Rush Run, O. CTY—Jefferson. RR—Penna lines.
S of H—Electric.
S of M—Electric.
Sales agent, C. H. Bromley, Cleveland, Ohio.

UPSON COAL & MINING CO. (THE)
Dixie Mine, Drift, No. 6 Seam, 3 ft. 6 in. thick.
PO—Dixie, O. SP—Same. CTY—Perry. RR—B. & O.
PR—W. F. Upson .....Newark, O.
PA—W. F. Upson, " "
TR—J. E. Upson.....Mansfield, O.
MS—J. M. Bell.....Dixie, O.
EE—J. M. Bell, " "
SM—B. J. Davis, " "
S of H—5 elec. locomotives. Track gauge 3 ft. 6 in.
S of M—6 elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 2 gen. units 250 volts D. C., 4 pumps.
EMP—100. Last fiscal year output 53,717 tons.
Sales agent, The Balto. & Ohio Coal Co., Cleveland, O.

URBAN COAL CO.
PO—North Lawrence, O.; CTY—Stark.
No report.

VAN KIRK COAL & MINING CO.
Drift Mines; Nos. 5 and 6 Seam, 36 to 72 in. thick.
PO—Mineral City, O.; SP—Same; CTY—Tuscarawas; RR—B. & O.
PR—D. O. Van Kirk, Mineral City, O.
TR—D. O. Van Kirk, " " "
GM—D. O. Van Kirk, " " "
PA—D. O. Van Kirk, " " "
MS—J. J. Williams, " " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—50. Last fiscal year output, 30,000 tons.

VALLEY CAMP COAL CO. (THE)
General Office, Cleveland, Ohio.
1 mine in Ohio, 1 mine in Penna.
Columbia Mine, Drift, Pgh No. 8 Seam, 5½ ft. thick.
PO—Fairpoint, O. SP—Same. Columbia Mine. CTY—Belmont. RR—B. & O., C. L. & W. Div.
PR—J. A. Paisley.....Cleveland, O.
GM—J. A. Paisley, " "
TR—W. W. Woods, " "
PA—H. E. Kinloch.....Parnassus, Pa.
GS—H. E. Kinloch, " "
S of H—Elec. loco.
S of M—Elec.
PP—3 return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C., 2 pumps
EMP—225. Last fiscal year output 226,828 tons.
Sales agent, J. A. Paisly, Ceveland, O.

VESPER COAL CO.
Carl No. 1 Mine, Drift, No. 8 Seam, 4½ ft. thick.
PO—Nelsonville, O. CTY—Gallia.
MS—J. S. Burns .....Carlton, O.
S of M—Hand.
EMP—47. State report.

VIRGINIA HILL COAL CO. (THE)
General Office, Cleveland, Ohio.
Virginia Hill Mine, Slope.
PO—Lafferty, O. SP—Same. CTY—Belmont. RR—B. & O.
GM—D. J. Jordan .....Cleveland, O.
PA—D. J. Jordan, " "
MS—Thos. J. Jordan....Lafferty, O.
S of H—Elec. loco.
S of M—Elec. machines.
PP—3 boilers, total 450 H. P., 250 volts D. C.

WABASH COAL CO. (THE)
Now the Modern Coal Mining Co.

WALTERS, WM.
Vasey Mine; Drift; Seam, 34 to 39 in. thick.
PO—Salineville, O.; SP—Same; CTY—Columbiana.
MS—Wm. E. Walter....Salineville, O.
S of H—Mules; track gauge, 38 in.
S of M—Hand.
EMP—5. Last fiscal year output, 2,500 tons.

WARD COAL CO.
Eva Mine, Drift, No. 5 Seam.
PO—Oak Hill, O. SP—Same. CTY—Jackson. RR—B. & O.
GM—C. A. Bowman ....Oak Hill, O.
PA—C. A. Bowman, " "
MS—C. A. Bowman, " "
S of M—Mules..
S of M—Hand.
PP—Boiler, 12 H. P.
EMP—20. Last fiscal year output 16,000 tons.

WASHINGTON COAL CO.
Washington Mine, Drift, No. 4 Seam.
PO—Fire Brick, O. SP—Monroe Furnace, O. CTY—Lawrence. RR—B. & O. S. W.
CM—W. B. Hitchcock...Fire Brick, O.
PA—W. B. Hitchcock, "
MS—M. C. Dickens, " "
S of H—Mules and gravity.
S of M—Hand.
EMP—25.

WELLSTON COLLIERY CO. (THE)
Wellston Colliery Mine, Shaft, No. 4 Seam, 3 ft. thick.
PO—Wellston, O. SP—Same. CTY—Jackson. RR—C. H. & D.
PR—Jerry Morrow .....Wellston, O.
TR—F. C. Morrow, " "
GM—W. S. McCloud, " "
GS—W. S. McCloud, " "
PA—W. S. McCloud, " "
EM—Ed. Kelly, " "
MM—R. B. Ervin, " "
EE—R. B. Ervin, " "
S of H—Mules and 1 elec. motor. Track gauge 36 in.
S of M—7 elec. machines.
PP—3 return tubular boilers, total 400 H. P., 2 gen. units, 250 volts D. C.
EMP—85. Annual output 65,000 tons.

WEST POINT COAL & COKE CO.
Succeeded by the Kirk-Dunn Coal Co.

WEST WHEELING COAL CO.
West Wheeling Mine, Drift, Pittsburgh Seam No. 8, 64 to 70 in. thick.
PO—Bridgeport, O. SP—Same. CTY—Belmont. RR—C. & P.
PR—Wm. G. Johnson...Bridgeport, O.
TR—T. H. Johnson, " "
PA—T. H. Johnson, " "
MS—John Crook, " "
CE—Homer Alther, " "
EM—Homer Alther, " "
EE—John Bennett, " "
S of H—36 Comp. air and 2 Elec. loco; track gauge 36 in.
S of M—6 elec. mining machines.
PP—500 volts D. C. (Power purchased.)
Sales agent, T. H. Johnson.

WHEAT HILL COAL CO.
Wheat Hill Mine, Drift, No. 7 Seam. 2½ ft. thick.
PO—East Palestine, O. SP—Same. CTY—Columbiana. RR—Penna.
GM—James S. Atchison E. Palestine, O.
PA—James S. Atchison, " "
S of H—Mules. Track gauge 2 ft. 9 inches.
S of M—Hand.
EMP—8. Last fiscal year output 3,922 tons.

WHEELING & LAKE ERIE COAL MNG. CO. (THE)
General Office, Leader News Building, Cleveland, Ohio.
Dillon No. 2, Herrick No. 4, Connor No. 3 Mines, Drifts, Pgh. No. 8 Seam, 5½ ft. thick.
PO—Dillonvale, O. SP—Same. CTY—Jefferson. RR—W. & L. E.
PR—D. R. Hanna ....Cleveland, O.
TR—M. A. Hanna, " "
GM—Michael Gallagher, " "
PA—T. F. Cadden, " "
S of H—39 elec. loco. and mules. Track gauge 36 in.
S of M—5 elec. mach.
PP—17 return tubular boilers.
EMP—1,200. Output for 3 months 20,000 tons.

WHITACRE FIREPROOFING CO.
Drift Mine.
PO—Waynesburg, O. SP—Same. CTY—Stark. RR—P. R. R.
GM—J. F. Whitacre ..Waynesburg, O.
PA—R. E. Whitacre, " "
MS—Jos. Miller and Will Parke.
S of H—Elec. loco. and mules.
S of M—Hand.
PP—Gen. unit, 250 volts D. C.

WHITAKER-GLESSNER CO.
General Office, Wheeling, W. Va.
1 Mine in West Virginia, 1 Mine in Ohio
Laughlin Mine, Drift, Pittsburgh No. 8 Seam, 5 ft. thick.
PO—Martins Ferry, Ohio..CTY—Belmont
PR—Alex. Glass.....Wheeling, W.Va.
TR—A. C. Whitaker, " "
GM—N. P. Whitaker, " "
GS—W. H. Kasley (of Mines) " "
PA—W. H. Kasley " "
CE—F. E. Fieger, " "
EE—Thos Swayne, " "
S of H—Mules; track gauge 34 in.
S of M—2 Elec. mach.
PP—Power furnished from Mill Plant.
EMP—28. Last fiscal year output 31,000 tons.

WILCOX COAL CO.
General Office, Akron, O.
Peacock Mine; Stripping; No. 5 Seam, 36 to 54 in. thick.
PO—Sandyville, O.; SP—Same; CTY—Tuscarawas; RR—B. & O.
GM—F. A. Wilcox.....Akron, O.
PA—F. A. Wilcox, " "
GS—C. G. Steelton.....Magnolia, O.
S of H—Mules; track gauge, 39 in.
EMP—15. Last fiscal year output, 6,000 tons.

WIGTON, S. R.
GM—S. R. Winton.....Roseville, O.
Wigton Mine, Drift, No. 6 Hocking Seam, 42 in. thick.
PO—Roseville, O., SP—Same, CTY—Muskingum. RR—(Wagon mine.)
MS—S. R. Wigton.....Roseville, O.
S of H—Mules.
S of M—Hand.
EMP—6. Last fiscal year output 1,000 tons.

Wigton and Robson Mines; Drifts; No. 6 Hocking Seam, 42 in. thick.
PO—Mcburney, O.; SP—Same; CTY—Muskingum; RR—Penna.
MS—Geo. W. Robson.....Roseville, O.
S of H—Mules; track gauge 32 in.
S of M—Hand.
EMP—12. Last fiscal year output 5,000 tons.

Intrurban Mine; Drift; No. 6 Hocking Seam, 42 in. thick.
PO—Roseville, O.; SP—Same; CTY—Perry; RR—Southeastern Ohio.
MS—Geo. Robson.....Roseville, O.
S of H—Mules. New mine.

WILLARD & CO., E. B.,
Idle more than a year. It is doubtful if mine will ever be operated again.

WILLIAMS BROS. & LITTLE.
Drift Mine; No. 6 Seam, 38 to 48 in. thick.
PO—Dennison, O.; CTY—Tuscarawas.
GM—Howell Williams....Dennison, O.
MS—Howell Williams. " "
S of H—Mules; track gauge 30 in.
EMP—10. Last fiscal output 4000 tons.

WILLIAMS, JOHN
Locust Grove Mine; Drift, No. 6 Seam, 36 to 60 in. thick.
PO—Coshocton, O.; SP—Same; CTY—Coshocton; RR—W. L. E.
Continued on Next Page.

WILLIAMS, JOHN—Continued.
PR—Thomas Williams....Coshocton, O.
GM—William Gilgannon, " "
S of H—Mules.
S of M—Hand.
PP—1 pump.
EMP—20. Last fiscal year output 70,000 tons.
Note—Have started a new opening will run coal October 1st.

WILLOW GROVE COAL CO.
Willow Grove Mine, Shaft, No. 1 Seam 2 to 4 ft. thick.
PO—Massillon, O.; SP—Same; CTY—Stark.
PR—D. A. Lewis.....Massillon, O
TR—C. F. Smith, " "
PA—C. F. Smith, " "
MS—C. F. Smith, " "
EM—H. Honald, " "
MM—B. Patinson, " "
S of H—Mules; track gauge 3 ft. 3 in.
S of M—Hand.
PP—2 Return tubular boilers, total 135 H. P., 2 pumps.
EMP—11. Last fiscal year output 4,400 tons.

WITCH HAZEL COAL CO.
General Office, Youngstown, O.
Florence No. 3 Mine, Drift, Pgh. No. 8 Seam 5 ft. thick.
PO—Smithfield, O.; SP—Piney Fork; CTY—Jefferson; RR—L. S. & M. S., Alliance Div.
PR—H. B. Wick.....Youngstown, O.
TR—W. J. Sampson, " "
GM—W. J. Sampson, " "
GS—Geo. Evans.....Smithfield, O.

WOLFORD, M. S.
Plain View Mine; Drift; No. 6 Seam, 48 in. thick.
PO—Coshocton, O., SP—Same, CTY—Coshocton. RR—W. & L. E. R. R.
PR—M. S. Wolford....Coshocton, O.
GS—M. S. Wolford, " "
PA—M. S. Wolford, " "
TR—Edgar Wolford, " "
GM—John I. Wolford, " "
EM—Edgar Nash, " "
S of H—Mules; track gauge 31 in.
S of M—Hand.
EMP—12. Last fiscal year output 6,000 tons.
Sales Agent, M. S. Wolford.

WOLF RUN COAL CO.
General Office, 811 Leader Bldg., Cleveland, O.
Elizabeth Mine, Shaft, No. 6 Seam, 3½ to 5 3-4 ft. thick.
PO—Wolf Run, O., SP—Bergholz, O., CTY—Jefferson; RR—N. Y. C., Alliance Div.
PR—W. H. Warner.....Cleveland, O.
TR—Whitney Warner, " "
PA—K. B. Whitworth, " "
CE—E. L. Thrower, " "
MS—David Thomas.....Wolf Run, O.
EE—Morgan Thomas, " "
SCO—McCracken Supply Co., Pgh., Pa.
S of H—9 Elec. loco.; track gauge 42 in.
S of M—11 Elec. machines.
PP—4 Erie City return tubular boilers, total 700 H. P., 3 gen. units 250 volts D. C., 2 pumps.
EMP—268. Last fiscal year output 156,942 tons. Sales Agent, W. H. Warner Co., Cleveland, O.

WRIGHT & ZEHNER CO. (THE)
General Office, Cleveland, Ohio.
X L Mine; Slope; 6½ A Seam, 32 to 40 in. thick.
PO—Bergholz, O. SP—Same. CTY—Jefferson; RR—N. Y. C., Alliance Div.
PR—J. J. Barlum.....Detroit. Mich.
TR—Wm. M. Wright....Cleveland, O.
Sec—Wm. E. Zehner, " "
GM—John S. McKeever, " "
GS—John S. McKeever, " "
PA—Wm. M. Wright....Cleveland, O.
CE—R. P. Millard.....Bergholz, O.
MM—Wm. Kinney.....Bergholz, O.
MS—Chas. S. McKeever, Bergholz, O.
S of H—11 Elec. loco., track gauge 36 in.
S of M—12 Elec. chain machines.
PP—4 Return tubular boilers, total 550 H. P., 3 gen. units 325 volts D. C., 2 Pumps.
EMP—185. Last fiscal year output 90,823 tons. (Strike for 7 months)
Sales Agent, Wm. M. Wright, Cleveland, O.

YORK CLAY & MINING CO., (THE)
General Office, Nelsonville, Ohio.
PR—J. P. Cummiskey..Detroit, Mich.
TR—W. H. Bennett....Nelsonville, O.
GM—W. H. Bennett, " "
PA—W. H. Bennett, " "
GS—B. E. Walburn.....Nelsonville, O.
EE—Wm. McConnell.....Kimberly, O.
Gen. Sales Agent, F. H. Sniff, Columbus, Ohio.

Half Moon No. 2, Drift, No. 6 Seam, 5 to 6 ft. thick.
PO—Buchtel, O., SP—Same, CTY—Athens; RR—Hocking Valley.
S of H—Horses and 2 elec. loco., track gauge 42 in.
S of M—4 Elec. machines.
PP—1 Erie boiler, 150 H. P., 1 gen. unit 250 volts D. C., 2 Pumps.
EMP—103. Last fiscal year output 81,000 tons.

Rainbow Block No. 1, Drift, No. 7 Seam, 5 to 5½ ft. thick.
PO—Buchtel, O., SP—Same, CTY—Athens; RR—Hocking Valley.
S of H—Horses and 1 Elec. loco; track gauge 42 in.
S of M—2 Elec. machines.
PP—Power furnished from plant at Half Moon No. 2.
EMP—36. Last fiscal year output 34,000 tons.

YOUGHIOGHENY & OHIO COAL CO. (THE)
General Office, Cleveland, O.
7 Mines in Ohio, 6 Mines in Penna.
PR—S. H. Robbins.....Cleveland, O.
TR—W. L. Robinson, " "
Chairman—J. G. Patterson, Pgh., Pa.
GS—A. W. Osborne.....Cleveland, O.
GS—Asst. A. G. Squibb....Barton, O.
PA—S. L. Thompson....Cleveland, O.
CE—John Rees.....Pittsburgh, Pa.
EM—W. A. Thomas, " "
MM—W. H. Williams.....Barton, O.
EE—W. H. Williams, " "
SCO—Y. & O. Coal Co., buyer, O. P. Parkin, Pittsburgh, Pa.
Sales Agent, H. L. Findley, Cleveland, O.

Barton, Maple Hill and Boggs Mines; Drifts; Pgh. No. 8 Seam; 5½ ft. thick.
PO—Barton, O.; SP—Same; CTY—Belmont. RR—B. & O., C. L. & W. Div.
MS—(B) Wm. Findlay. (MH) Sharpe. Hathaway, (B) P. J. Leonard, Barton, O.
SM—R. L. Creswell.....Barton, O.
S of H—Elec. and mules; track gauge 44 in.
S of M—Elec.
PP—7 boilers, total 1,050 H. P., 500 and 250 volts D. C.
EMP—750.

Florence Mine; Drift; Pgh. No. 8 Seam, 5½ ft. thick.
PO—Martins Ferry, O.; SP—Same; CTY—Belmont; RR—P. R. R., C. & P. Div.
MS—Lee Rankin....Martins Ferry, O.
SM—E. H. Cope, " "
S of H—Elec.; track gauge 44 in.
S of M—Elec.
PP—2 Boilers, total 300 H. P., 500 volts D. C.
EMP—300.

Amsterdam Mine, Shaft; No. 6 Seam, 4½ ft. thick.
PO—Amsterdam, O.; SP—Same—Jefferson; RR—L. E. A. & W.
MS—Richard Jones,.....Amsterdam, O.
SM—Joshua Kirkland, " "
S of H—Elec.; track gauge 44 in.
S of M—Elec. and mules.
PP—4 Boilers, total 450 H. P., 250 volts D. C.
EMP—200.

Delora Mine; Shaft; Pgh. No. 8 Seam; 5½ ft. thick.
PO—Glencoe, O.; SP—Same; CTY—Belmont; RR—B. & O., Newark Div.
MS—Edward Lee.....Glencoe, O.
SM—L. Johnson, " "
S of H—Elec. and mules; track gauge 44 in.
S of M—Elec.
PP—6 Boilers, total 600 H. P., 250 volts D. C.
Eleanor Mine; Shaft; Pgh. No. 8 Seam; 5½ ft. thick.
PO—Warnock, O.; SP—Same; CTY—Belmont. RR—B. & O., Newark Div
MS—J. L. Robson.....Warnock, O.
SM—Geo. C. Jeffries, " "
S of H—Elec.; track gauge 44 in.
S of M—Elec. and hand.
PP—3 Boilers, total 450 H. P.

ZANESVILLE COAL CO. (THE)
General Office, Zanesville, Ohio.
PR—W. L. Timmons ....Zanesville, O.
GM—W. L. Timmons, " "
GM—Asst. J. E. Trainer, " "
GS—Thos. Opie .....Crooksville, O.
PA—C. W. Joslin.....Zanesville, O.
EM—T. C. Connor, " "

Keystone No. 1, Drift, Middle Kittanning Seam, 42 to 50 in. thick.
PO—Crooksville, O., SP—Same, CTY—Perry. RR—Penna. C. A. & C., Zanesville Div.
MS—Geo. Jones.....Crooksville, O.
S of H—Mules, 4 elec. loco. Track gauge 36 in.
S of M—9 elec. machines.
PP—2 gen. units 250 volts A. C., 3 phase, 60 cycle. Power purchased.
EMP—150.

Keystone No. 3, Drift, No. 6 Low vein, 42 in. thick.
PO—Crooksville, O., SP—Same, CTY—Perry; RR—Penna., C. A. & C., Zanesville Div.
MS—Robert Wallace.....Roseville, O.
S of H—Mules and 1 elec. loco. Track gauge 36 in.
S of M—4 elec. machines.
EMP—75. Power from No. 1 Mine.

Keystone No. 4, Drift, Middle Kittanning Seam, 42 in. thick.
PO—Roseville, O., SP—Roseville, O., CTY—Perry. RR—Penna. Lines & C. A. & C.
MS—Thos. Evans.....Roseville, O.
S of H—Mules and 2 elec. loco.; track gauge 42 in.
S of M—5 elec. machines.
PP—1 Gen. unit, 250 volts, A. C. 3-phase 60-cycle; power purchased.
EMP—100.

Keystone No. 5, Drift, No. 6 Low Vein, 42 in. thick.
PO—Saltillo, O., SP—Same, CTY—Perry. RR—N. Y. C. & Z. & W.
MS—Edward Moore.....Saltillo, O.
S of H—Mules and 1 Elec. loco.; track gauge 36 in.
S of M—Hand and 5 Elec. mach.
PP—1 gen. unit 250 volts A. C., 3 phase, 60 cycle. Power purchased.
EMP—100.

OKLAHOMA

For List of Abbreviations See Page 498.

ARKO COAL CO.
Arko, Kavanaugh and Poteau Mines; Slopes; Up. and L. Witteville Seams, 46 to 49 in. thick.
PO—Witteville, Okla.; SP—Same; CTY—LeFlore; RR—Ft. S. P. & W.
GM—J. E. Finney.....Poteau, Okla.
PA—J. E. Finney, " "
MS—J. A. Freeze, ..Witteville, Okla.
MM—J. H. Shelton, " "
EE—C. F. Riggs, " "
SCO—A. S. Johnson Merc. Co., Buyer, A. S. Johnson, Poteau, Okla.
S of H—2 Elec. loco. and rope; track gauge 36 in.
S of M—4 Elec., 10 comp. air mach.
PP—2 Return tubular boilers, total 250 H.P., 1 gen. unit 280 volts D. C., 1 compressor, 5 pumps.
Sales Agent, F. C. Finney, Poteau, Okla.
Successors to the Poteau Coal & Merc. Co.

BACHE-DENMAN COAL CO.
General Office, Ft. Smith, Ark.
Nos. 1 and 2 Mines; Drift and Slopes; L. Hartshorne Seam.
PO—Red Oak, Okla.; SP—Same; RR—C. R. I. & P.
PR—F. Bache.....Ft. Smith, Ark.
TR—C. P. Javner, " "
GM—C. H. Finley, " "
PA—C. H. Finley, " "
S of H—Mules and rope.
S of M—Hand.
PP—Boiler 125 H. P.

BLUE RIDGE COAL CO.
General Office, Fort Smith, Ark.
PR—D. J. Jorden....Fort Smith, Ark.
PA—D. J. Jorden, " " "
GS—E. W. Hogan....McCurtain, Okla.
MM—W. H. James, " "
EE—W. H. Poole, " "

No. 1 Mine; Slope; Panama Seam, 48 to 66 in. thick.
PO—McCurtain, Okla.; SP—SAME; CTY—Haskell; RR—Ft. S. & W.
MS—W. D. Reese....McCurtain, Okla.
S of H—2 Elec. loco. and mules; track gauge, 42 in.
S of M—3 Elec. mach.
PP—4 Erie City Iron Works return tubular boilers, total 600 H. P., gen. unit, 250 volts D. C., 1 pump.
EMP—204. Coke Ovens 210 Bee Hive.

No. 3 Mine; Slope; Panama Seam, 48 to 60 in. thick.
PO—McCurtain, Okla.; SP—Same; CTY—Haskell; RR—F. S. & W.
MS—Frank Kahabka—McCurtain, Okla.
S of H—5 Elec. loco. and mules; track gauge, 42 in.
S of M—5 Elec. mach.
PP—2 Erie City Iron Works return tubular boilers, total 300 H. P., 1 pump.
EMP—175.
Successors to the Sans Bois Coal Co.

BOKOSHE MINING CO.
Out of business.

BLACKSTONE COAL CO. Inc.
PO—Harryetta, Okla.; CTY—Okmulgee.
No report.

BOKOSHE-SMOKELESS COAL CO.
Nos. 1, 3 and 5 Mines; Slope; Panama Seam, 48 to 72 in. thick.
PO—Bokoshe, Okla.; SP—Same; CTY—Leflore; RR—M. V.
PR—A. P. Gunther.....Bokoshe, Okla.
TR—Frank Gunther, " "
GM—Joseph Oliver, " "
GS—Joseph Oliver, " "
EM—H. O. Lewis, " "
MM—John Robertson, " "
MS—James Bell, " "
S of H—Mules.
S of M—Hand.
PP—5 Boilers, total 500 H. P., 5 pumps.
EMP—150. Last fiscal year output, 54,000 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

BOLEN-DARNALL COAL CO.
General Office, McAlester, Okla.
Slope Mine.
PO—McAlester, Okla.; SP—Craig, Okla. and Hartford, Ark.; CTY—Pittsburg; RR—C. R. I. & P., M. K. & T.
L. S. Mohr, Receiver.
S of H—Mules.
S of M—Hand and elec. machine.
PP—4 Boilers, 600 H. P.; 1 gen. unit 250 volts D. C.
EMP—200.
PO—Craig, Okla.; CTY—Pittsburgh.

BREWER COAL AND MNG. CO.
Succeeded by Southern Fuel Co.

BRUSHY COAL & MINING CO.
Drift and Slope Mine; McAlester Seam.
PO—Bache, Okla. SP—Bond, Okla.; CTY—Pittsburgh; RR—C. R. I. & P.
GM—J. O. Mitchell.....Bache, Okla.
PA—J. O. Mitchell, " "
SM—J. O Mitchell, " "
MS—Boyd Martin, " "
S of H—Mules and gravity.
S of M—Hand.
EMP—9.

CANADIAN COAL CO.
General Office, Tulsa, Okla.
Dawson Mine; Slope; Seam 32 in. thick.
PO—Dawson, Okla.; SP—Same; CTY—Tulsa. RR—St. L. & S. F.
PR—J. R. Cole, Jr.....Tulsa, Okla.
TR—C. C. Cole, " "
MS—Fred Calvert...R.F.D., Tusla, Okla.
SM—O. A. Cunningham, " "
S of H—Mules and rope.
S of M—Hand.
PP—2 Boilers, total 50 H. P., 1 pump.
EMP—75. Last fiscal year output 30,000 tons.

CAPITOL COAL & MINING CO.
Slope Mine; McAlester Seam, 38 in. thick.
PO—McAlester, Okla.; SP—No. McAlester, Okla.; CTY—Pittsburg; RR—M. K. &T., Wilburton Br.
PR—C. H. Fleet, ..Oklahoma, Okla.
TR—R. S. Nelson, McAlester, Okla.
GM—W. S. Nelson, " "
MM—L. W. Walker, " "

CARBON COAL CO.
Nos. 1, 2 and 3 Mines; Slopes, McAlester Seam.
PO—Carbon, Okla.; SP—Same; CTY—Pittsburgh; RR—M. K. & T., Wilburton Br.
PR—P. G. Pierce.....Carbon, Okla.
GM—P. G. Pierce, " "
TR—E. P. Joyner, " "
PA—E. P. Joyner, " "
EM—F. B. Saxton, " "
MS—F. B. Saxton, " "
MM—Clyde Hale, " "
S of H—Mules.
S of M—Hand.
PP—1 Compressor.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

CENTRAL COAL & COKE CO.
General Office, Kansas City, Mo.
2 Mines in Oklahoma, 3 in Missouri, 3 in Wyoming, 7 Arkansas, 9 in Kansas.
Nos. 8 and 9 Mines; Slope.
PO—Sutter, Okla.; SP—Same; CTY—LeFlore; RR—Poteau Valley; K.C.S.
PR—Charles S. Keith, Kansas City, Mo.
VP—Harry N. Taylor.....Chicago, Ill.
PA—Thos. Mackie....Kansas City, Mo.
SM—Thos. Mackie, " "
MS—S. D. Graham.....Sutter, Okla.
S of H—Rope and mules.
S of M—Elec. mach.
PP—3 Boilers.

CHOCTAW COAL & COKE CO.
General Office, Fort Smith, Ark.
No. 2 Mine; Slope; Panama Seam.
PO—Bokoshe, Okla. SP—Same. CTY—LeFlore; RR—Midland Valley.
GM—F. Bentelschies....Bokoshe, Okla.
PA—F. Bentelschies, " "
SM—F. Bentelschies, " "
MS—Chas. Smith, " "
S of H—Mules and rope.
S of M—Hand.
PP—Boiler 100 H. P.
EMP—35.

COALGATE CO. (THE)
No. 5 Mine, Shaft, Lehigh Seam, 4 ft. 4 in. to 5 ft. thick.
PO—Coalgate, Okla. SP—Same. CTY—Coal. RR—M. K. & T.
PR—Wm. H. Yale....New York, N. Y.
TR—S. T. Kerr....Philadelphia, Pa.
GM—S. W. W. Pomeroy.Coalgate, Okla.
PA—S.W.W. Pomeroy, Coalgate, Okla.
MS—R. H. Brown, " "
SM—O. D. Lickleder.....Coalgate, Okla.
MM—John Creber, " "
S of H—Mules, rope, gravity and 2 elec. loco. Track gauge 30 in.
S of M—Hand.
PP—6 J. O'Brien return tubular boilers, total 480 H. P., 2 gen. units, 250 volts D. C.
EMP—290. Last fiscal year output 128,440 tons.
Sales agent, Southern Fuel Co., Dallas, Texas.

CREEK COAL & MNG. CO. (THE)
Mine No. 1, Shaft, Henryetta Seam, 2 ft. 8 in. to 3 ft. 1 in. thick.
PO—Henryetta, Okla. SP—Same. CTY—Okmulgee. RR—St. L. & S. F.
PR—James Cameron....Henryetta, Okla.
GM—James Cameron, " "
PA—James Cameron, " "
TR—Joe Hillman, "
MS—Joe Johnson, " "
SM—J. B. Rily, " "
EM—M. J. Smith....McAlester, Okla.
MM—Wm. Kerr .....Henryetta, Okla.
EE—M. D. Godar.
S of H—Mules and 1 gasoline locomotive. Track gauge 42 in.
S of M—9 Elec. mach. and hand.
PP—4 return tubular boilers, 1 John O'Brien, 1 Atlas, 2 Casey Hedges, 2 gen. units, 250 volts D. C., 1 pump.
EMP—233. Last fiscal year output 125,971 tons.
Sales agent, Roy W. Short, Henryetta, Okla.

DAVIDSON & SONS.
Wright Mine, Drift.
PO—Dewar, Okla. SP—Same. CTY—Okmulgee. RR—M. O. & G.
GM—J. K. Davidson....Dewar, Okla.
PA—J. K. Davidson, " "
S of H—Mules.
S of M—Hand.

DEEP FORK COAL MINING CO.
PO—Coalton, Okla.; CTY—Okmulgee.
No report.

DEGNAN-McCONNELL COAL & COKE CO.
PO—Wilburton and Howe, Okla.; CTY—Latimer and LeFlore.
No report.

DOW COAL CO.
General Office, McAlester, Okla.
Savanna Mine, Slope, McAlester Seam.
PO—Savanna, Okla. SP—Same. CTY—Pittsburg. RR—M. K. & T.
GM—W. E. Beatty ...McAlester, Okla.
PA—W. E. Beatty, " "
EM—B. E. Clark .....Dow, Okla.
MS—Wm. Jones .....Savanna, Okla.
MS—Roy Bridgewater, " "
SM—J. M. Stewart, " "
S of H—Rope and mules.
S of M—Elec. mach. and hand.
PP—5 boilers, total 500 H. P.

ECLIPSE COAL & MNG. CO.
General Office, Wilburton, Okla.
Eclipse Mine No. 1, Slope, Wilburton Seam, 4 to 5 ft. thick.
PO—Adamson, Okla. SP—Same. CTY—Pittsburg. RR—M. K. & T., Wilburton Branch.
PR—H. L. Dalby .. Wilburton, Okla.
GM—H. L. Dalby, " "
TR—Robt. Livingston, " "
CE—John R. Dalby, " "
EM—John R. Livingston, Wilburton, Okla.
PA—John Robinson ....Adamson, Okla.
MS—John Robinson, " "
MM—John Robinson, " "
S of H—Mules and steam. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 100 H. P.
EMP—40. Last fiscal year output 12,000 tons.
Sales agent, The McAlester Fuel Co.

FOLSOM MORRIS COAL MINING CO. (The)
General Office, Lehigh, Okla.
PR—Dorset Carter, Colcord Bldg., Oklahoma City, Okla.
TR—W H. Sparger.....Lehigh, Okla.
GM—D. C. McAlpine, " "
GS—D. C. McAlpine, " "
PA—D. C. McAlpine, " "
EM—V. C. Robbins, " "
MM—John Baxendale, " "
SM—E. S. Goodson, " "
Sales Agent, B. M. Haile, Colcord Bldg., Oklahoma City, Okla.

No. 1 Mine; Shaft; McAlester Seam, 36 to 56 in. thick.
PO—Lehigh, Okla.; SP—Same; CTY—Coal; RR—M. K. & T., S. Fe, C. R. I. & P.
MS—Wm. Ogilvie.....Lehigh, Okla.
S of H—Mules.
S of M—Hand.
PP—2 O'Brien return tubular boilers, total 200 H. P.
EMP—120. Last fiscal year output, 48,033 tons.

No. 5 Mine; Shaft; McAlester Seam, 48 to 54 in. thick.
PO—Lehigh, Okla.; SP—Same; CTY—Coal; RR—M. K. & T., Santa Fe, C. R. I. & P.
MS—James Miller.....Lehigh, Okla.
S of H—Mules and rope.
S of M—Hand.
PP—5 O'Brien return tubular boilers, total 500 H. P., 1 pump.
EMP—350. Last fiscal year output, 127,340 tons.

No. 6 Mine; Shaft; McAlester Seam, 48 to 56 in. thick.
PO—Phillips, Okla.; SP—Same; CTY—Coal; RR—M. K. & T., Santa Fe, C. R. I. & P.
MS—J. W. Ray.....Lehigh, Okla.
S of H—1 Elec. loco.; track gauge, 30 in.
S of M—Hand ....
PP—5 O'Brien return tubular boilers, total 550 H. P., 1 gen. unit, 250 volts D. C.
EMP—350. Last fiscal year output, 119,000 tons.

No. 8 Mine; Shaft; McAlester Seam, 36 to 40 in. thick.
PO—Lehigh, Okla.; SP—Same; CTY—Coal; RR—M. K. & T.; Santa Fe, C. R. I. & P.
MS—Henry Pax.....Lehigh, Okla.
S of H—1 Elec. loco., rope and mules; track gauge, 30 in.
S of M—Hand.
PP—5 O'Brien return tubular boilers, total 500 H. P., gen. unit, 500 volts D. C.
EMP—350. Last fiscal year output, 135,752 tons.

FURSMAN COAL CO
Fursman Mine; Drift; Seam, 32 to 39 in. thick.
PO—Schulter, Okla.; SP—Same; CTY—Okmulgee; RR—M. O. & G.
PR—W. H. Fursman, Schulter, Okla.
GM—W. H. Fursman, " "
PA—W. H. Fursman, " "
MS—W. H. Fursman, " "
TR—Winifred Fursman, " "
S of H—Mules and gravity; track gauge, 42 in.
EMP—10.
Output at present, 60 tons per day. Capacity when developed, 500 tons per day.

GAINES CREEK COAL & MINING CO.
PO Adamson, Okla.; CTY Pittsburg.
No report.

GREAT WESTERN COAL & COKE CO.
General Office, McAlester, Okla.
Nos. 2, 3, 8 and 9 Mines; Slope; Hartshorne Seam.
PO—Wilburton, Okla.; SP—Same; CTY—Latimer.
RECEIVER—Jas. F. Elliott, McAlester, Okla.

GREEN RIDGE COAL CO.
Green Ridge Mine; Slope; Henryetta-Dewar Seam; 36 in. thick.
PO—Dewar, Okla.; SP—Same; CTY—Okmulgee; RR—M. O. G.
PR—J. W. Hinton....Henryetta, Okla.
TR—Scott W. Whitehead..Dewar, Okla.
MS—David Hall, " "
CE—C. E. Schurch....Henryetta, Okla.
S of H Mules and rope.
S of M—Elec. mach.
PP—Purchase power.
Output about 250 to 300 tons per day.
Sales Agent, J. W. Hinton, Henryetta.

HAILY-OLA COAL CO.
General Office, Haileyville, Okla.
PR—D. M. Hailey ..Haileyville, Okla.
TR—D. M. Hailey, " "
MM—M. H. McGlasson, " "
GM—James F. Elliott..McAlester, Okla.
PA—James .F Elliott, " "
Sales agency, The McAlester Fuel Co., McAlester, Okla.

Haileyville Nos. 1, 2, 3 and 6, Shaft and 3 slopes, Hartshorne Seam, 4½ ft. thick.
PO—Haileyville, Okla. SP—Same CTY Pittsburg. RR—C. R. I. & P.
MS—A. E. Nichols...Haileyville, Okla.
SM—J. W. Elliott, " "
S of H—Mules. Track gauge 36 in.
S of M—12 comp. air mach. and hand.
PP—10 return tubular boilers, total 1,500 H. P., 2 compressors, 4 pumps.
EMP—450. Last fiscal year output 116,660 tons.

Lutie Nos. 4 and 5 Mines, Slopes, Hartshorne Seam, 4½ ft. thick.
PO—Lutie; CTY—Latimer; SP—Wilburton. RR—C. R. I. & P.
MS—Thos. McAlpine .....Lutie, Okla.
SM—R. W. Church, " "
S of H—Mules. Track gauge 36 in.
S of M—1 comp. air mach. and hand.
PP—2 return tubular boilers, total 300 H. P., 2 compressors, 1 pump.
EMP—200. Last fiscal year output 67,450 tons.

HAZELTON COAL CO. (THE)
Hazelton Mine; Slope and stripping, Lehigh Seam, 44 to 50 in. thick.
PO—Coalgate, Okla.; SP—Chase, Okla.; CTY—Coal; RR—A. T. & S. F., O. C. Div.
PR—James McGinnis, Coalgate, Okla.
TR—H. A. Everest, " "
GM—H. A. Everest, " "
PA—H. A. Everest, " "
MS—H. A. Everest, " "
EM—A. W. Schneider, " "
MM—John Hunt, " "
EE—Ira Ingram, " "
S of H—Mules, rope and gravity.
S of M—Hand.
PP—Locomotive 160 H.P.
EMP—130. Output 300 tons daily.
Sales Agency, McAlester Fuel Co.

HICKORY COAL & MINING CO.
PO—Tulsa, Okla.; CTY—Tulsa.
No report.

HOME SMOKELESS COAL CO.
PO—Bokoshe, Okla.; CTY—LeFlore.
No report.

INTERSTATE COAL & DEVELOPMENT CO.
Out of business.

KALI-INLA COAL CO.
General Office, Fort Smith, Ark.
Kali-Inla No. 1, Slope and Shaft, Lower Hartshorne Seam.
PO—Dwight, Okla. SP—Hartshorne, Okla. CTY—Latimer. RR—C. R. I. & P.
PR—F. Bache .....Fort Smith, Ark.
VP—C. H. Finley, " "
TR—E. P. Jayner, " "
MS—John Patterson .... Dwight, Okla.
S of H—Rope and mules.
S of M—8 elec. machines.
PP—Purchase power.

KEYSTONE COAL MINING CO.
Keystone Mine; Slope; McAlester Seam, 4 to 6 ft. thick.
PO Coalgate, Okla; SP Same; CTY—Coal. RR Santa Fe, Lehigh.
PR—E. P. Williamson, Coalgate, Okla.
GM—E. P. Williamson, " "
GS—E. P. Williamson, " "
MS—E. P. Williamson, " "
TR Victor Bey, " "
CE—T. L. McLaughlin, McAlester, "
S of H—Rope and mules.
S of M—Hand.
PP 2 Return tubular boilers, total 160 H.P.; 1 pump.

KING COAL CO.
PO—Dewar, Okla.; CTY—Okmulgee.
No report.

LANE & WILLIAMSON COAL CO.
Nos. 4 and 5 Mines; Slope and Stripping; McAlester Seam, 48 to 72 in. thick.
PO Coalgate, Okla.; SP Same; CTY—Coal; RR—C. R. I. & P., Ardmore Branch.
PR—E. P. Williamson....Coalgate, Okla.
GM—E. P. Williamson, " "
PA—E. P. Williamson, " "
MS—E. P. Williamson, " "
TR—Wm. Lane, " "
EM—T. L. McLaughlin, Haileyville, Okla.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 240 H. P., 2 gen. units, 1 pump.
EMP—40. Last fiscal year output 27,000 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

LE BOSQUET COAL & MNG. CO.
Le Bosquet Mine, Slope and drift, Hartshorne Seam.
PO—Hughes, Okla. SP—Same. CTY—Latimer. RR—C. R. I. & P.
GM—Thomas G. Bell ....Hughes, Okla.
PA—Thomas G. Bell, " "
EM—Thomas G. Bell, " "
MS—Thomas G. Bell, " "
SM—Richard Geiger, " "
S of H—Mules.
S of M—Hand.
PP—2 boilers, total 200 H. P.
EMP—70.

McALESTER COAL & COKE CO.
General Office, Buck (via Carbon) Okla.
GM—P. R. Allen ....McAlester, Okla.
TR—C. E. Chapman, Buck (via Carbon) Okla.
GS—D. D. Dunkin, Buck, (via Carbon), Okla.
PA—D. D. Dunkin, Buck, (via Carbon), Okla.
MM—Chas. Newman, Buck (via Carbon) Okla.
SM—Geo. M. Abbott, Buck (via Carbon) Okla.

Buck No. 6 Mine, Shaft, "Lower Hartshorne" Seam, 3 ft. 4 in. to ft. 6 in. thick.
PO—Buck, Okla. SP—McAlester, Okla. CTY—Pittsburg. RR—M. K. & T.
MS—D. D. Dunkin .....Buck, Okla.
S of H—Mules, rope and 1 gasoline loco. Track gauge 3 ft.
S of M—Hand and 8 comp. air mach.
PP—8 return tubular boilers, total 800 H. P., 1 air comp., 2 pumps.
EMP—225. Last fiscal year output 120,000 tons.

Buck No. 21 Mine, Slope, "Lower Hartshorne" Seam, 3 to 5 ft. thick.
PO—Buck, Okla. SP—Alderson, Okla. CTY—Pittsburg. RR—C. R. I. & P., M. K. & T.
MS—D. D. Dunkin, Buck (via Carbon) Okla.
S of H—Mules and rope. Track gauge 3 ft.
S of M—Hand.
PP—2 return tubular boilers, total 160 H. P., 2 pumps.
EMP—45. Last fiscal year output 5,000 tons.

McALESTER-CHOCTAW COAL CO.
Redman and Jeannette Mines.
PO—McAlester, Okla. CTY—Pittsburg.
No report.

McALESTER-EDWARDS COAL CO.
Nos. 1 and 2 Mines, Slopes. McAlester Seam, 48 to 60 in. thick.
PO—Pittsburg, Okla. SP—Same. CTY—Pittsburg. RR—M. K. & T., C. R. I. & P.
GM—F. B. Drew .....Pittsburg, Okla.
PA—F. B. Drew, " "
MS—A. B. Cameron, " "
S of H—Mules.
S of M—Hand.
PP—5 boilers.
EMP—220.

McALESTER & GALVESTON COAL MNG. CO.
Galveston No. 3, Slope, Lower Hartshorne Seam, 2 ft. 8 in. to 3½ ft. thick.
Continued on Next Page.

McALESTER & GALVESTON COAL MNG. CO.—Continued.
PO—North McAlester, Okla. SP—Same. CTY—Pittsburg. RR—M. K. & T., Main Line.
Lessee—W. P. Mullen..McAlester, Okla.
MS—W. P. Mullen, " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—1 Walsh & Weidner boiler, total 70 H. P., 1 pump.
EMP—30. Last fiscal year output 9,626 tons. Idle since last September.

McDONALD COAL CO. (THE)
Now the Green Ridge Coal Co.

MILBY & DOW COAL & MINING CO.
General Office, Dow, Okla.
PR—R. C. Storrie, San Francisco, Cal.
TR—H. C. Rice.....Dow, Okla.
GM—H. C. Rice, " "
PA—H. C. Rice, " "
GS John Paterson, " "
EE—R. T. Browning, " "
SM—E. R. Long, " "
EM—B. E. Clark.....McAlester, "
MM—Adam Cant.....Alderson "
Sales Agency, McAlester Fuel Co., McAlester, Okla.

No. 3 Mine; Slope; McAlester Seam, 34 in. thick.
PO—Dow, Okla.; SP—Same; CTY—Pittsburg; RR—C. R. I. & P.
MS—H. Smith.....Dow, Okla.
S of H—Rope.

No. 4 Mine; Slope; McAlester Seam, 34 in. thick.
PO—Dow, Okla.; SP—Same; CTY—Pittsburg; RR—C. R. I. & P.
MS—John Boorrite.....Dow, Okla.

No. 5 Mine; Slope and Shaft; McAlester Seam, 34 in. thick.
PO—Dow, Okla.; SP—Same; CTY—Pittsburg; RR—M. K. & T.
MS—H. Patterson.....Dow, Okla.
S of H—1 Elec. loco.
S of M—Hand.
PP—3 Casey-Hedges water tube boilers, total 450 H. P., 2 gen. units, 250 volts D. C., 4 pumps.
EMP—400.

No. 9 Mine; Shaft; McAlester Seam, 34 in. thick.
PO—Dow, Okla.; SP—Same; CTY—Pittsburg; RR—C. R. I. &P.
S of H—Elec. loco., mules, rope and gravity; track gauge, 42 in.
S of M—9 Elec. mach.
PP—4 F. M. & Co. return tubular boilers, total 600 H. P., 4 gen. units, 250 volts D. C., 1 pump.
EMP—400.

MILLARD & HALLIDAY.
PO—Carbon, Okla.; CTY—Pittsburgh.
No report.

MILTON CO-OPERATIVE COLONY.
Milton Mine; Panama Seam, 84 in. thick.
PO—Milton, Okla. SP—Same; CTY—Leflore; RR—F. S. & W.
PR—T. J. Mills.....Milton, Okla.
MS—John Hetherington....Milton, Okla.
TR—V. B. Curl.....Guthrie, Okla.
GM—E. S. Lowther, " "
PA—E. S. Lowther, " "
SM—E. S. Lowther, " "
S of H—Mules.
S of M—Hand.
PP—1 Watertube boiler.
EMP—40. Last fiscal year output 12,886 tons.

MISSOURI, KANSAS & TEXAS RY. CO. (Coal Dept.)
General Office, Parsons, Kan.
Four mines in Oklahoma, 3 mines in Kansas.
Nos. 10, 12, 14 and 17 Mines, 3 Shafts and 1 Slope, Lehigh Seam, 3 ft. 8 in. to 5 ft. thick.
PO—Coalgate, Okla. SP—Same. CTY—Coal. RR—M. K. & T.
GS—J. H. Hibben .....Parsons, Kan.
EM—E. H. Troel, " "
PA—G. E. Scott.....St. Louis, Mo.
MS—Robt. Blackbird...Coalgate, Okla.
S of H—1 elec. loco. and mules. Track gauge 36 in.
S of M—Hand.
PP—16 water tube boilers, total 1,600 H. P., 1 gen. unit, 250 volts D. C., 1 compressor and 4 pumps.
EMP—650. Last fiscal year output 472,097 tons.

NEW STATE COAL CO.
General Office, Tulsa, Okla.
PR—Arthur L. Murphy....Tulsa, Okla.
TR—G. E. Williamson, " "
GM—G. E. Williamson, " "
PA—G. E. Williamson, " "
CE—G. E. Williamson, " "

Collinsville Mine, Stripping, Collinsville Seam, 25 in. thick.
PO—Collinsville, Okla. SP — Same. CTY—Rogers. RR—A. T. & S. Fe.
MS—C. D. Evans....Collinsville, Okla.
S of H—Mules.
S of M—Steam shovel.
EMP—150. Last fiscal year output 21,000 tons.

Broken Arrow Mine, Stripping, Adams Creek Seam, 26 in. thick.
PO—Broken Arrow, Okla. SP—Same. CTY—Tulsa. RR—M. K. & T., Osage Div.
MS—J. H. Calvin..Broken Arrow, Okla.
S of H—Mules.
S of M—Steam shovel.
EMP—152. Last fiscal year output 22,000 tons.

OAK RIDGE COAL CO.
Drift and Slope Mine, Lower Hartshorne Seam, 53 in. thick.
PO—Red Oak, Okla.; SP—Same; CTY—Latimer; RR—C. R. I. & P.
PR—J. B. Hilling.....Red Oak, Okla.
GM—J. B. Hilling, " "
PA—J. B. Hilling, " "
MS—J. B. Hilling, " "
TR—E. H. Smallwood, " "
SM—E. H. Smallwood, " "
S of H—Mules and steam loco.
S of M—Hand.
PP—1 Return tubular boiler, total 125 H. P.
EMP—50. Last fiscal year output 50,000 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

OKLAHOMA COAL & MINING CO.
PO—Henryetta, Coalton and Dewar, Okla. CTY—Okmulgee.
No report.

OKLAHOMA CONSOLIDATED COAL CO.
General Office, Muskogee, Okla.
Nos 2, 3, 5, 6, 7 and 9 Mines; Shaft and Slopes.
PO—Dewar, Okla.; CTY—Okmulgee; RR—M. O. & G.
GM—H. A. Millard....Okmulgee, Okla.
GS—R. T. Price, " "
EM—C. E. Schurch.....Dewar, "
MS—C. P. Schockley, " "
S of H—1 Gasoline loco. and mules.
S of M—16 Elec. mach.
PP—7 Boilers, total 635 H. P.
EMP—900.
Successors to the Oklahoma Coal Co.

OSAGE COAL & MINING CO.
Receiver, James Duncan, Krebs, Okla.
Nos. 5, 7 and 8 Mines; Shaft and Slop; McAlester Seam, 50 in. thick.
PO—Krebs, Okla.; SP—Same; CTY—Pittsburg; RR—M. K. & T. ...
GS—James Elliott, ..McAlester, Okla.
EM—Harry Shaw, " "
MM—Dan Lewis, " "
PA—T. W. Wheatley, ..Krebs, Okla.
MS—W. H. Collins, " "
CE—S. K. Smith, ...St. Louis, Mo.
EE—Chas. Mellor, No. McAlester, Okla.
S of H—Mules and rope.
S of M—5 Elec. mach. and hand.
PP—Power purchased.
EMP—175. Last fiscal year output 65,290 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

PHOENIX COAL CO.
PO—Savanna, Okla.; CTY—Pittsburgh.
No report.

PLEASANT VALLEY COAL & COKE CO.
PO—Coalton, Okla. and Schulter, Okla.; CTY Okmulgee.
No report.

PIERCE COAL CO.
General Office, Carbon, Okla.
Whiskers Mine; Slope; No. 1 Seam, 48 to 60 in. thick.
PO Adamson, Okla.; SP—Same; CTY—Pittsburg; RR—M. K. & T.; Wilburton Branch.
PR—P. G. Pierce, ...Carbon, Okla.
GM—P. G. Pierce, " "
GS—P. G. Pierce, " "
PA—P. G. Pierce, " "
TR—E. P. Joyner, " "
EM—F. B. Saxton, " "
MM—Clyde Hale, " "
MS—J. D. Rotenberry, Adamson, "
S of H—Mules.
S of M—Hand.
Last fiscal year output 25,000 tons.
Sales Agency, McAlester Fuel Co., McAlester, Okla.

POCAHONTAS COAL CO.
General Office, McAlester, Okla.
C. F. Wingate, Receiver, Hartshorne, Okla.
Pocahontas Mine; Slope; Hartshorne Seam, 48 in. thick.
PO—Pocahontas, Okla.; SP—Haileyville, Okla.; CTY—Pittsburg.
PR—W. E. Beaty.....McAlester, Okla.
TR—W. E. Beaty, " "
EM—B. E. Clark, " "
MS—John Cairns....Pocahontas, "
SCO—Baker-Reidt Merc. Co., Pocahontas, "
S of H—Rope and mules.
S of M—Hand.
PP—5 Return tubular boilers, 1 compressor, 1 pump.

POTEAU COAL & MERCANTILE CO.
Now Arko Coal Co.

ROCK ISLAND COAL MNG. CO.
General Office, 139 W. Van Buren St., Chicago, Ill.
PR—Carl Scholz .....Chicago, Ill.
GM—Carl Scholz, " "
TR—Geo. H. Crosby.....Chicago, Ill.
PA—H. S. Mikesell, " "
GS—Wm. A. Evans....Hartshorne, Okla.
Sales agency, McAlester Fuel Co., McAlester, Okla.

Nos. 7,8, 10 and 40 Mines; Shaft and Slope; Hartshorne Seam, 42 to 72 in. thick.
PO—Hartshorne, Okla. SP—Same. CTY—Pittsburg. RR—C. R. I. & P.
MS—Wm. Evans .....Hartshorne, Okla.
S of H—Elec. and mules. Track gauge 42 in.
S of M—Elec. and hand.
PP—Gen. units D. C.
EMP—800. Last fiscal year output 485,306 tons.
Note—No. 10 Mine developing output about 300 tons daily.

Nos. 5, 9 and 38 Mines; Shaft; Alderson Seam, 40 in. thick. Operate Washery.
PO—Alderson, Okla. SP—Same CTY—Latimer. RR—C. R. I. & P.
MS—Wm. A. Evans..Hartshorne, Okla.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—240. Last fiscal year output 131,183 tons.
No 9 is a new mine.

SANS BOIS COAL CO.
Sold to the Blue Ridge Coal Co.

ROSS-CALDWELL COAL MINING CO.
No. 2 Mine; Slope; Seam 54 in. thick.
PO—Lehigh, Okla.; SP—Same; CTY—Coal; RR— M. K. & T.
PR—A. K. Ross.....Lehigh, Okla.
TR—Roy Caldwell, " "
MS—R. D. Travel, " "
MM—Wm. Cowan, " "
S of H—Steam and mules.
S of M—Hand.
EMP—54. Last fiscal year output, 20,000 tons.
Formerly Ross & Holstead.

SOUTHERN FUEL CO.
General Office, McAlester, Okla.
Brewer Mines; Slopes; McAlester Seam, 50 in. thick.
PO—Savanna, Okla.; SP—Same; CTY—Pittsburg; RR—M. K. T., Main Line.
PR—H. W. Adams....McAlester, Okla.
TR—H. W. Adams, " "
GM—F. F. LaGrave, " "
MS—George C. McAlpine, Savanna, Okla.
SM—James B. Cassada, " "
S of H—Mules and rope; track gauge, 36 in.
S of M—2 Comp. air mach. and hand.
PP—5 Boilers, total 500 H. P., 1 compressor, 2 pump.
EMP—90. Last fiscal year output, 56,105 tons.
Sales Agency, Southern Fuel Co., Dallas, Texas.
Successors to the Brewer Coal & Mining Co.

SOUTHWEST COAL CO.
General Office, Tulsa, Okla.
Slope Mine; Bituminous Seam, 30 in. thick.
PO Dawson, Okla.; SP—Same; CTY—Tulsa; RR Frisco.
PR—O. H. P. Thomas.....Tulsa, Okla.
TR—O. H. P. Thomas, " "
GM—O. T. Brown.....Dawson, Okla.
MS—O. T. Brown, " "
S of H—Steam loco. and mules.
S of M—Hand.
PP—Boiler 80 H. P., 1 pump.
EMP—35. Last fiscal year output 8000 tons.

TURKEY CREEK COAL CO.
Out of business.

UNION COAL CO.
General Office, Hartshorne, Okla.
3 Mines; Slopes; Hartshorne Seams, 48 in. thick.
PO—Adamson, Okla.; SP—Same; CTY—Pittsburg; RR—M. K. & T., Wilburton Br.
PR—W. E. Beaty.....McAlester, Okla.
TR—C. S. Wingate..Hartshorne, Okla.
GM—C. S. Wingate, " "
PA—C. S. Wingate, " "
MS—A. McKennon....Adamson, "
EM—B. E. Clark, " "
MM—I. Mossop, " "
SCO—Baker-Reidt Merc. Co., Adamson, "
S of H—Mules.
S of M—Hand.
PP—Return tubular boilers, 1 compressor.

VICTORIA COAL CO.
No. 1 Mine; Shaft; Henryetta, Seam.
PO—Henryetta, Okla.; SP—Same; CTY—Okmulgee; RR—Frisco, Main Line.
PR—James Cameron....Henryetta, Okla.
GM—James Cameron, " "
PA—James Cameron, " "
TR—Jos. Hillman, " "
MM—W. R. Kerr, " "
EE—Otto Miller, " "
MS—Jos. Johnson, " "
SM—H. L. Shriver, " "
EM—M. J. Smith.....McAlester, Okla.
S of H—Mules; track gauge 42 in.
S of M—6 Elec. mach.
PP—2 Casey-Hedges, return tubular boilers, gen. unit 250 volts D. C., 100 K. W., 1 pump.
EMP—141.
Last fiscal year output 87,613 tons.

WARDEN-PULLEN COAL CO.
Warden Mine, Shaft, Henryetta Seam, 3 ft. thick.
PO—Henryetta, Okla. SP—Frisco. CTY—Okla. RR—Frisco.
PR—J. J. Pullen.....Henryetta, Okla.
GM—J. J. Pullen, " "
PA—J. J. Pullen, " "
SM—J. J. Pullen, " "
CE—Jas Pullen, " "
MM—Jas. Pullen, " "
EE—Jas. Pullen.....Henryetta Okla.
EM—R. M. Pullen, " "
S of H—Mules and rope. Track gauge 24 in.
S of M—3 elec. machines.
PP—Boilers, total 140 H. P.
EMP—70.

WHITEHEAD COAL MNG. CO.
PO—Henryetta, Okla. CTY—Okmulgee.
No report.

WILBURTON COAL & MINING CO.
No. 1 Mine; Slope; Hartshorne Seam, 60 in. thick.
PO—Wilburton, Okla.; SP—Same; CTY—Latimer; RR—Rock Island.
PR—J. J. Katigan, .Wilburton, Okla.
GM—J. J. Katigan, " "
PA—J. J. Katigan, " "
MS—J. J. Katigan, " "
TR—John Campbell, " "
CE—Mr. Clark, " "
S of H—Steam hoist.
S of M—Hand.
PP—1 Boiler; 1 engine, and 1 pump.
EMP—6.

WILLIAMS COAL CO.
PO—Williams and Hartshorne, Okla.; CTY—LeFlore and Pittsburgh.
No report.

WRIGHT COAL CO.
Davidson and E. B. Morgan Mines, Shaft, Seam 3 ft. thick.
PO—Dewar, Okla. SP—Same. CTY—Okmulgee. RR—M. O. & G.
PR—James Davidson .....Dewar, Okla.
PA—James Davidson, " "
TR—J. E. Key, " "
GM—J. P. Duncan, " "
MS—J. P. Duncan and E. B. Morgan, Dewar, Okla.
S of H—Mules.
S of M—Hand.
EMP—32. Last fiscal year output 1,300 tons.
Sales Agent, J. E. Key, Dewar, Okla.

PENNSYLVANIA ANTHRACITE

For List of Abbreviations See Page 498.

ALDEN COAL CO.
Alden Mine; 2 Shafts; 36 to 96 in. thick.
PO—Alden Station, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
PR—M. S. Kemmerer..Mauch Chunk, Pa
TR—K. M. Smith . Alden Station, Pa.
GM—K. M. Smith, " "
PA—K. M. Smith, " "
MS—K. M. Smith, " "
EM—W. S. Norton, " "
CE—R. V. Morris....Wilkes-Barre, Pa.
SCO—Alden Supply Co., Ltd. Buyer, John M. Phillips, Alden Station, Pa.
S of H—2 Steam and 3 gasoline loco. Track gauge 30 in.
S of M—Hand.
PP—11 return tubular boilers, total 2,262 H. P., 3 air compressors and 3 pumps.
EMP—737. Last fiscal year output 293,120.04 tons.
Sales agency, Whitney & Kemmerer, New York, N. Y., and Philadelphia, Pa.

ALLIANCE COAL MNG. CO.
Alliance Colliery, Shaft and Drift, Diamond and Buck Mtn Seams, 2½ to 3 ft. thick.
PO—Kaska, Pa. SP—Middleport, Pa. CTY—Schuylkill. RR—P. & R., Schuylkill Valley Branch and Alliance Branch.
PR—S. D. Warriner..Philadelphia, Pa.
PA—E. Hughes, " "
GM—E. Ludlow .....Lansford, Pa.
VP—E. Ludlow, " "
MS—M. O. Morgan .....Kaska, Pa.
EM—F. S. Gallus.....Pottsville, Pa.
S of H—2 steam loco. and mules.
S of M—10 comp. air mach and hand.
PP—15 return tubular, Logan, Jeanesville and Chambersburg boilers, total 2,250 H. P., 1 compressor and 2 pumps.
EMP—275. Output for three months 22,385 tons.
Sales agency, Lehigh Coal & Navigation Co., Philadelphia, Pa.
Temporarily abandoned.

ARCHBALD COAL CO.
General Office, Wilkes-Barre, Pa.
Birmingham Colliery; Shaft; Drift, and Slope; Grassy Island, New County, Clark and Dunmore Seams, 24 to 168 in. thick.
PO—Archbald, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
PR—James H. Hughes..Wilkes-Barre, Pa.
GM—James H. Hughes, " "
PA—C. Roy Sterling, " "
TR—John Manier....Binghamton, N. Y.
EM—Chas. F. Moore....Carbondale, Pa.
MS—R. Howells.....Archbald, Pa.
S of H—2 Steam loco., mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—1 Water, 4 return tubular boilers, total 600 H. P., 2 compressors, 1 pump.
EMP—400. Last fiscal year output 158,562 tons.
Sales Agent, Blanchard & Co., Binghamton, N. Y.

BEAVER VALLEY COAL CO.
Scotch Valley Mine.
PO—Pottsville, Pa.
No report.
Out of business.

BLACK HEATH COAL CO.
Black Heath Mine; CTY—Schuylkill.
MS—James Scott.....Minersville, Pa.
State report.

BRIGHT COAL CO.
Out of business.

BRIGHTON COAL CO.
Out of business.

BUCK RIDGE COAL MINING CO.
Buck Ridge Mine; Slope.
PO—Shamokin, Pa.; SP—Same; CTY—Northumberland.
PR—Howard S. Bowers, No. 1 Broadway, New York, N. Y.
TR—Gardner Patterson, No. 1 Broadway, New York, N. Y.
GM—Telford Lewis.....Johnstown, Pa.
GS—Raymond Lewis.....Shamokin, Pa.
S of H—3 Steam loco.; track gauge, 36 in.
S of M—Hand.
PP—1 Heine water tube, 7 Heine return tubular boilers, total 1,100 H. P., 3 pumps.
EMP—400. Last fiscal year output, 141,832 tons.

BUCK RUN COAL CO.
Buck Run Mine, Slope, Crosby, Daniel, Skidmore, Seven Ft. and Buck Mtn Seams, 3 to 16 ft. thick.
PO—Minersville, Pa. SP—Rohrersville. Pa.; CTY—Schuylkill; RR—P. & R., Mine Hill Br.
PR—Jas. B. Neale....Minersville, Pa.
GM—Jas. B. Neale, " "
PA—J. F. Hay, " "
EM—W. L. Cross.....Minersville, Pa.
EE—W. L. Cross, " "
TR—S. B. Thorne, 17 Battery Place, New York, N. Y.
S of H—1 Steam and 6 Elec. loco., and mules; track gauge 36 in.
S of M—Hand.
PP—9 water tube boilers, total 1,900 H. P., 2 gen. units, volts 550 A. C. and 250 D.C., 3 phases, 60 cycles. 3 air compressors and 4 pumps.
EMP—664. Last fiscal year output 290,737 tons.
Sales agent, Thorne-Neale & Co., Phila-Pa.

BULLS HEAD COAL CO.
Bulls Head Mine; Slope; Seam 60 in. thick.
PO—Scranton, Pa. SP—Park Place, Pa. CTY—Lackawanna; RR—D. & H., D. L. & W.
PR—David Spruks.....Scranton, Pa.
TR—David Spruks, " "
GM—David Spruks, " "
PA—J. Law, " "
MS—Chas. Walker, " "
S of H—Steam loco. and mules.
S of M—Hand.
PP—1 boiler, 200 H. P., 1 compressor.
EMP—285. Last fiscal year output 50,116.08 tons.
Sales agent, M. Schlowen, Pottsville, Pa.

BUTCHER CREEK COAL CO.
General Office, St. Clair, Pa.
Laurel Run Mine, Slope and Stripping, "Juggler" Seam, 20 to 100 ft. thick.
PO—Broad Mountain, Pa. SP—Minersville, Pa. CTY—Schuylkill. RR—P. & R., Mine Hill Branch.
GM—L. J. Whims.....St. Clair, Pa.
PA—L. J. Whims, " "
S of H—Mules and rope. Track gauge 30 in.
S of M—Hand.
PP—5 return tubular boilers, total 500 H. P., 10 engines, 4 pumps.
EMP—100.
Sales agent, Hall Bros., Baltimore, Md., and Slattery Bros., Philadelphia, Pa.

CAMBRIDGE COAL CO.
Cambridge Mine, Slope, Dunmore, Clark Holmes Seam, 3 to 12 ft. thick. Operate washery partly.
PO—Shenandoah, Pa. SP—Same. CTY—Schuylkill. RR—P. & R.
TR—W. J. James.....Shenandoah, Pa.
GM—D. R. James, " "
PA—D. R. James, " "
MS—D. R. James, " "
MM—Wm. E. Smith, " "
S of H—Mules and 1 steam loco. Track gauge 42 in.
S of M—Hand.
PP—4 boilers, total 550 H. P.
EMP—110. Last fiscal year output 78,897 tons.
Sales agent, F. W. Kennedy & Co.

CARBONDALE COAL MINING CO.
Eolands Mine, Slope, Dunmore, Clark Seam 3 to 10 ft. thick.
PO—Carbondale Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
PR—John J. Boland....Carbondale, Pa.
GM—John J. Boland, " "
GS—John J. Boland, " "
PA—John J. Boland, " "
MS—John Magnor, " "
TR—H. P. Mellet,.....Scranton, Pa.
S of H—Mules.
S of H—Hand.
PP—3 Return tubular boilers, 1 pump.
EMP—92. Last fiscal year output 31,672 gross tons.

CARLTON COAL CO.
Slope and Drift.
PO—Scranton, Pa. SP—So. Scranton, Pa. CTY—Lackawanna. RR—D. & H.
PR—John Gibbons .....Scranton, Pa.
GM—John Gibbons.....Scranton, Pa.
TR—A. J. Manley, " "
MS—Jas. Loftus, " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—1 water tube boiler, total 40 H.P. Also purchase power.
EMP—65. Last fiscal year output 30,000 tons.

CARNEY & BROWN COAL CO.
Carney & Brown Mine, Slope, Clark Seam 3½ to 6 ft. thick.
PO—Dunmore, Pa. SP—Same. CTY—Lackawanna. RR—D. L. & W., Winton Br.
PR—John Carney .....Dunmore, Pa.
GM—John Carney, " "
TR—Margaret Brown, " "
GS—John J. Brown, " "
MS—Thos. Mullen, " "
S of H—Rope and mules. Track gauge 28 in.
S of M—Hand.
PP—3 return tubular boilers, total 360 H. P.
EMP—108. Last fiscal year output 42,236 tons.

CENTRAL COAL CO.
Wyoming Colliery; Slope and Drift; Seam 48 to 144 in. thick.
PO—Hudson, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
PR—A. F. Wolf, ...Hudson, Pa.
TR—A. F. Wolf, " "
PA—C. E. Barker, " "
MS—John G. Saricks, " "
CE—John B. Tamblyn, " "
GM—Joseph G. Saricks, Freeland, Pa.
S of H—Elec. and steam loco.; track gauge 36 in.
S of M—Hand.
PP—Gen. units 440 volts A.C., 2 pumps. Power purchased.
EMP—150.
Sales Agency, J. S. Wentz & Co., Philadelphia, Pa.

CLEAR VIEW COAL CO.
Conklin Mine; Shaft Diamond, Rock, Big and Clark Seams, 2 ft. 5 in. to 18 ft. thick.
PO—Scranton, Pa. SP—Same. Park Place Station, Pa. CTY—Lackawanna. RR—O. & W.
PR—F. M. Van Horn ...Scranton, Pa.
TR—F. P. Christian, " "
PA—R. L. Kissinger, Box 373, Scranton, Pa.
MS—W. E. Martwick, Box 373, Scranton, Pa.
EE—Harry Craig.
CE—S. D. Dimmick, Box 373, Scranton, Pa.
S of H—2 elec. loco.. Track gauge 36 in.
S of M—2 elec. mach.
PP—Power purchased.
EMP—200. Last fiscal year output 44,000 tons.

CLINTON FALLS COAL CO.
General Office, Scranton, Pa.
Clinton Falls Mine; Drift; Dunmore and Nos. 1, 2 and 3 Seams, 42 to 84 in. thick.
PO—Forest City, Pa.; SP—Same; CTY—Wayne; RR—N. Y. C. & H. R.
PR—Daniel P. Pace.....Scranton, Pa.
TR—J. A. Pace, " "
GM—N. A. Pace. " "
EM—Joseph Cleary....Forest City, Pa.
MS—George R unil, " "
S of H—1 Steam loco.; track gauge, 36 in.
S of M—Hand.
PP—Boiler, 150 H. P.
EMP—55. Last fiscal year output, 7,000 tons.
Sales Agent, D. P. Pace, Scranon, Pa.

COLONIAL COLLIERIES CO.
General Office, North American Building, Philadelphia Pa.
Natalie Mine, Slope, Buck Mtn and Lykens Valley Seam, 2 to 15 ft. thick.
PO—Natalie, Pa. SP—Same. CTY—Northumberland. RR—P. & R., Natalie Branch.
PR—Percy C. Madeira..Philadelphia, Pa.
TR—Louis C. Madeira, " "
GM—Frank A. Hill.....Pottsville, Pa.
PA—Frank A. Hill. " "
EM—Chas. J. Groff, " "
MS—Jacob Holt.....Natalie, Pa.
MM—Wm. Shlotterbach....Natalie, Pa.
EE—Fred Riley, " "
SCO—Natalie Store Co. Buyer, Allan J. Weir, Natalie, Pa.
S of H—4 steam loco., mules and rope. Track gauge 36 in.
S of M—Hand and comp. air.
PP—4 water tube, 6 return tubular boilers, total 2,200 H. P., 2 gen. units, 2,300 volts A. C., 2 compressors.
EMP—620. Last fiscal year output 231,602 tons.
Sales agent, Madeira, Hill & Co., Philadelphia, Pa.

CONNELL ANTHRACITE MINING CO.
General Office, Scranton, Pa.
Connell Mine, Drift, Seams 3 to 8 ft. thick.
PO—Bernice, Pa.; SP—Same; CTY—Sullivan; RR—L. V., Bowman Creek Branch.
PR—W. L. Connell.....Scranton, Pa.
GM—W. L. Connell, " "
TR—J. S. McAnulty, " "
PA—H. A. Connell, " "
EM—Carl S. Motiska " "
MS—T. V. McLaughlin....Bernice, Pa.
MM—John McDonald, " "
S of H—12 Elec. loco.; track gauge 36 in.
S of M—12 Elec. mach.
PP—6 Water tube boilers, total 1,600 H.P., 10 gen. units; 2 pumps.
EMP—470. Last fiscal year output 356,124 tons.

COXE BROS & CO.
See Lehigh Valley Coal Co.

DARKWATER COAL CO.
Newcastle Mine; Slope; Crosby, Mammoth, Skidmore, and Buck Mtn Seam, 36 to 600 in. thick.
PO—Minersville, Pa. SP—Darkwater, Pa. CTY—Schuylkill. RR—Penna. P.S. V. Branch.
PR—Jas. B. Neale.....Minersville, Pa.
GM—Jas. B. Neale, " "
PA—J. F. Hay, " "
MS—John Conway, " "
EM—W. L. Cross.....Minersville, Pa.
EE—W. L. Cross, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—2 Water tube and 6 return tubular boilers, total 1200 H. P., 2 compressors, 2 pumps.
EMP—240. Last fiscal year output 81,168 tons.
Sales agent, Thorne Neal & Co., Philadelphia, Pa.

DAVIS, JOHN H. COAL CO.
Elsworth Mine, Slope and Stripping, Mammoth Seam 8 to 40 ft. thick.
PO—St. Clair, Pa.; SP—Same; CTY—Schuylkill; RR—Phila. & Reading.
GM—J. Arthur Davis.
PA—J. Arthur Davis.
GS—J. Arthur Davis.
S of H—Mules, 2 steam loco.; track gauge 30 in.
S of M—Hand.
PP—6 Return tubular boilers, total 400 H.P.
EMP—90. Last fiscal year output 40,000 tons.
Sales Agents, C. D. Norton Co., Philadelphia, Pa.

DELAWARE & HUDSON CO. (THE)
General Office, Scranton, Pa.
PR—L. F. Loree.....New York, N. Y.
VP—(In charge of operations) W. H. Williams, New York, N. Y.
TR—C. A. Walker....New York, N. Y.
PA—J. White Sprong....Albany, N. Y.
GS—C. C. Ross.....Scranton, Pa.
Asst Supts—Charles Dorrance, Jr., and E. R. Pettebone.....Scranton, Pa.
EM—S. E. VanHorn " "
ME—A. E. Lister, " "
EE—George E. Gramm, " "
Sales Agency, The Hudson Coal Co.

Baltimore No. 5 Mine; Shaft, Baltimore, Ross, Red Ash, Checker, Abbott, Kidney, Hillman, Snake Island and Stanton Seams 36 to 216 in. thick.
PO—Parsons, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—James Peters.....Parsons, Pa.
S of H—2 Elec., 1 steam loco., mules rope and gravity.
S of M—Hand.
PP—6 B. & W., water tube, 16 loco. type return tubular boilers, toal 5100 H. P., 3 gen. units 2200 volts A. C., 3 phase, 25 cycles; 2 compressors, 6 pumps.
EMP—871. Last fiscal year output 405,360 tons.

BALTIMORE TUNNEL Tunnel, Stanton, Baltimore and Red Ash Seams, 45 to 216 in. thick.
PO—Wilkes-Barre, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.

Continued on Next Page.

DELAWARE & HUDSON CO.—Continued.

MF—David J. Edwards..Wilkes-Barre, Pa.
S of H—3 Elec., 2 steam loco., mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—4 Stirling, water tube, 3 loco type return tubular boilers total 1755 H. P., gen. units 275 volts D. C., 6 pumps.
EMP—375. Last fiscal year output 175,692 tons.

BOSTON MINE—Shaft, Red Ash, Bennett, Five Foot Bennett and Cooper Seams 72 to 180 in. thick.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—Wm. A. Jones.....Plymouth, Pa.
S of H—Mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—4 Stirling, water tube boilers, total 1080 H. P., 2 compressors, 1 pump.
EMP—494.

COAL BROOK MINE—Drifts; Grassy Island, Top, Bottom and Third Seams, 36 to 72 in. thick.
PO—Carbondale, Pa.; SP—Same CTY—Lackawanna RR—D. & H.
MF—James Tasker.....Carbondale, Pa.
S of H—31 Elec. 6 seam loco., rope, mules and gravity; track gauge 30 in.
S of M—Hand.
PP—4 Water tube, 6 return tubular boilers total 2292 H. P., 2 gen. unit 2300 volts A. C., 3 phase, 25 cycles; 3 pumps.
EMP—1536. Last fiscal year output 682,767 tons.

DELAWARE MINE—Shaft, Five Foot, Cooper, Bennett, Ross Three Foot, Red Ash and Checker; 33 to 96 in. thick.
PO—Hudson, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—Jos. D. Campbell....Hudson, Pa.
S of H—4 Elec., 1 steam loco., mules, rope and gravity; track gauge 28 in.
S of M—Hand.
PP—6 Stirling, water tube boilers, total 1620 H. P., 1 Gen. units 275 volts D. C., 2 compressors, 3 pumps.
EMP—701. Last fiscal year output 322,731 tons.

EDDY CREEK MINE; Shaft, slope and drift; No. 2 Four Foot, Diamond, Rock, Fourteen Foot, New County, Clark, Dunmore No. 4 and Upper Four Foot; 20 to 72 in. thick.
PO—Olyphant, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
MF—P. W. Fadden.....Olyphant, Pa.
S of H—3 Comp. air, 4 elec., 3 steam loco., gravity, mules and rope; rack gauge 30 in. thick.
S of M—Hand.
PP—12 Loco. type return ubular boilers, total 2700 H. P., gen. unit 275 volts D. C., 1 compressor, 7 pumps.
EMP—1324. Last fiscal year output 637,962 tons.

GRAVITY SLOPE—Drift and slope, Archbald and Dunmore Seams, 33 to 60 in. thick.
PO—Archbald, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
MF—John J. Kearney, Archbald, Pa.
S of H—3 Steam loco., mules rope and gravity; track gauge 30 in.
S of M—Hand.
PP—4 Stirling water tube boilers, total 1080 H. P., gen. unit 275 volts D. C., 5 pumps.
EMP—963. Last fiscal year output 382,511 tons.

JERMYN MINE; Shaft, Archbald, Grassy Island, Dunmore and New County Seam, 30 to 72 in. thick.
PP Jermyn, Pa.; SP Same CTY—Lackawanna RR—D. & H.
MF—A. P. Patten.....Jermyn, Pa.
S of H—15 Elec. mach., rope and mules; track gauge 28 in.
S of M—Hand.
PP—4 Wickes water tube, 8 loco. type return tubular boilers, total 2200 H. P., 3 gen. units 275 volts D. C. 1 compressor, 8 pumps.
EMP—833. Last fiscal year output, 407,709 ons.

Legitts Creek Mine—Shaft, Dunmore No. 2, 3, 4, Four Foot, Five Foot, Eight Foot, Diamond, Rock and Fourteen Foot, 30 to 96 in. thick.
PO—Scranton, Pa.; SP—Providence, Pa.; CTY—Lackawanna; RR—D. & H.
MS—Levi Emanuel.....Scranton, Pa.
S of H—19 Comp. air loco., mules, rope and gravity; track gauge 30 in.
S of M—Hand.
PP—8 Stirling water tube boilers, 14 loco. type return tubular boilers, total 3910 H. P.; 11 compressors, 5 pumps.
EMP—874. Last fiscal year output 321,192 tons.

Manville Mine—Shaft; New County, Dunmore No. 2, 3 and 4 Seams; 30 to 48 in. thick.
PO—Scranton, Pa.; SP—Green Ridge, Pa.; CTY—Lackawanna; RR—D. & H.
MS—Jas. J. Thomas....Scranton, Pa.
S of H—Mules, rope and gravity; track gauge 30 in.
S of M—Hand.
PP—4 Loco. type return tubular boilers, total 900 H. P., 3 pumps.
EMP—371. Last fiscal year output 63,153 tons.

MARVINE MINE—Shaft; Dunmore No. 3, 4, Fourteen Foot, Clark, New County and Diamond Seams 32 to 96 in. thick.
PO—Scranton, Pa.; SP—Providence, Pa.; CTY—Lackawanna; RR—D. & H.
MF—Edward F. McGlynn..Scranton, Pa.
S of H—8 Comp. Air; 6 Elec. loco., mules and rope; track gauge 30 in.
S of M—Hand.
PP—2 Stirling, 5 Wicks, water tube boilers, total 2040 H. P.; gen. unit 275 volts D. C., 2 pumps. Power from Olyphant plant.
EMP—948. Last fiscal year output 368,520 tons.

Olyphant Mine—Shaft and Slope, Nos. 1, 2, Four Foot, Diamond, Rock, New County, Fourteen Foot, Clark, Dunmore No. 4 and Upper Four Foot Seams, 20 to 72 in. thick.
PO—Olyphant, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
MF—J. H. Pritchard.....Olyphant, Pa.
S of H—17 Comp. air, 7 Gasoline loco., mules, rope and gravity; track gauge 30 in.
S of M—Hand.
PP—4 Stirling water tube boilers. toal 1852 H. P.; gen. unit 2300 volts A. C., 3 phase, 25 cycles, 5 compressors, 5 pumps.
EMP—1856. Last fiscal year output 822,666 tons.

Plymouth No. 2 Mine—Shaft, Cooper, Snake Island, Lance, Hillman, Stanton, Five Foot, Bennett, Red Ash and Abbott Seams, 52 to 132 in. thick. Operate Washery.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—Edward Flynn.....Plymouth, Pa.
S of H—Rope, mules and gravity; track gauge 36 in.
S of M—Hand.
PP—11 Loco type return tubular boilers, total 2475 H. P.; 2 gen. units 2300 volts A. C., 3 phase, 60 cycles, 3 compressors, 5 pumps.
EMP—494. Last fiscal year output 186,760 tons.

Plymouth No. 3 Mine—Shaft, Lance, Hillman, Stanton, Five Foot, Bennett, Red Ash and Ross Seams, 30 to 114 in. thick. Operate Washery.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—Fred Badman.....Plymouth, Pa.
S of H—Rope, mules and gravity; track gauge 36 in.
S of M—Hand.
PP—6 Wicks, water tube boilers, total 1800 H. P., 1 compressor, 1 pump.
EMP—896. Last fiscal year output 486,648 tons.

Plymouth No. 4 Mine—Shaft, Red Ash, Bennett, Ross, (Bennett & Cooper) Seams, 72 to 204 in. thick.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerns; RR—D. & H
MF—Thomas Coates....Plymouth, Pa.
S of H—Mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—21 Cylinder return tubular boilers, total 567 H. P., 2 pumps.
EMP—204.

Plymouth No. 5 Mine—Shaft, Red Ash, Five Foot, Bennett, Cooper and Ross Seams, 36 to 132 in. thick.
PO—Plymouth, Pa.; SP—Came; CTY—Luzerne; RR—D. & H.
MF—Thomas Coates.....Plymouth, Pa.
S of H—Hules, rope and gravity.
S of M—Hand.
PP—6 Stirling water tube boilers, 1620 H. P., 1 pump.
EMP—938. Last fiscal year output 453,696 tons.

Powderly Mine—Slope, drift and stripping; Grassy Island, Top, Bottom and Third Seams, 30 to 60 in. thick.
PO—Carbondale, Pa.; SP—Mayfield, Pa.; CTY—Lackawanna; RR—D. & H.
MF—John F. Scott....Carbondale, Pa.
S of H—7 Elec., 2 Steam loco, mules, rope and gravity; tarck gauge 22 and 30 in.
S of M—Hand.
PP—6 Return tubular boilers, total 900 H. P.; gen. units 275 volts D. C., 14 pumps.
EMP—856. Last fiscal year output 428,206 tons.

Von Sorch Mine—Slope, Dunmore Nos. 2, 3, 4, Clark, New County, Fourteen Foot, Five Foot and Rock Seams, 32 to 96 in. thick.
PO—Scranton, Pa.; SP—Green Ridge, Pa.; CTY—Lackawanna; RR—D. & H.
MF—Edward A. Lewis....Scranton, Pa.
S of H—8 Comp. Air, 1 Steam loco., mules, rope and gravity; track gauge 30 in.
S of M—Hand.
PP—1 Stirling water tube boiler, 11 loco. type return tubular boilers, total 2745 H. P., 1 compressor, 3 pumps.
EMP—1269. Last fiscal year output 460,310 tons.

DELAWARE, LACKAWANNA & WESTERN RAILROAD CO.

General Office, 90 West Street, New York, N. Y.
PR—W. H. Truesdale, New York, N.Y.
VP—E. E. Loomis, " "
TR—A. D. Chambers, " "
PA—C. C. Hubbell, " "
GM—R. A. Phillips....Scranton, Pa.
GS—C. E. Tobey, " "
EM—Chief. A.C.LaMonte, " "
EE—H. M. Warren, " "
Bradford Samson, Supt. of Construction, Scranton, Pa.
Sales Agency, D. L. & W. Coal Co., New York, N. Y.; Asst. Line Sales Agent, H. A. Smith, Scranton, Pa.

Archbald Mine.
PO—Scranton, Pa. SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—7 Elec. loco., mules and rope.
S of M—Hand.
PP—4 Boilers, total 1212 H. P., 1 gen. unit.
EMP—965.

Auchincloss Mines.
PO—West Nanticoke, Pa.; SP—Plymouth, Pa.; CTY—Luzerne; RR—D.L.&W.
S of H—5 Elec. loco.
PP—3 Boilers, total 1500 H. P., gen. unit, 1 comp.
EMP—596.

Avondale Mine.
PO—Chauncey, Pa.; SP—Plymouth, Pa.; CTY—Luzerne; RR—D. L. & W.
S of H—1 Elec. loco.
PP—10 Boilers, total 1625 H. P., 2 gen. units, 6 pumps.
EMP—440.

Bellevue Mine.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—16 Elec. loco.
PP—Boiler 100 H. P., 3 gen. units and 8 pumps.
EMP—1054.

Bliss Mines.
PO—West Nanticoke, Pa.; SP— Same; CTY—Luzerne; RR—D. L. & W.
S of H—10 Elec. and 1 steam loco.
PP—4 Boilers, total 2000 H. P., 4 gen. unit, 1 comp. and 4 pumps.
EMP—895.

Brisbin Mines.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—6 Elec. loco.
PP—5 Boilers, total 1250 H. P., 1 gen. unit, 3 pumps.
EMP—779.

Cayuga.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—6 Elec. and 1 steam loco., 6 boilers, total 1,500 H. P., and 1 pump.
EMP—448.

Continental Mine.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—5 Elec. loco.
PP—Boiler 50 H. P., 1 gen. unit.
EMP—638.

Diamond Mine.
PO—Scranton, Pa. SP—Same. CTY—Lackawanna; RR—D. L. & W.
S of H—1 Elec. and 4 steam locos.
PP—4 Boilers, total 2000 H. P., and 13 pumps.
EMP—1194.

Dodge Mine.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—6 Steam and 7 elec. loco.
PP—10 Boilers, total 3,180 H. P., 2 gen. units and 2 pumps.
EMP—676.

Hallstead Mine.
PO—Duryea, Pa.; SP—Same; CTY—Luzerne; RR—D. L. & W.
PP—11 Boilers, total 1990 H. P.
EMP—476.

Holden Mine.
PO—Taylor, Pa.; SP—Same, CTY—Lackawanna; RR—D. L. & W.
S of H—8 Elec. loco.
PP—7 Boilers, total 1020 H. P., 1 gen. unit and 2 pumps.
EMP—484.

Hyde Park Mine.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—12 Elec. loco.
PP—Boiler total 175 H. P., 1 gen. unit and 1 pump.
EMP—880.

Loomis Mine.
PO—West Nanticoke, Pa.; SP—Same, CTY—Luzerne; RR—D. L. & W.
PP—3 Boilers, total 330 H. P., 1 comp. and 3 pumps.
EMP—437.

Manville Mine.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
PP—Boilers, total 1322 H. P., and 2 pumps.
EMP—460.

National Mine.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—9 Elec. loco.
PP—8 Boilers, total 920 H. P., 2 gen. units and 4 pumps.
EMP—714.

Pettebone Mine.
PO—Luzerne, Pa.; SP—Same; CTY—Luzerne; RR—D. L. & W.
S of H—1 Elec. loco.
PP—10 Boilers, total 1,350 H. P., 1 gen. unit and 2 pumps.
EMP—450.

Pyne Mines.
PO—Taylor, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—11 elec. and steam loco.
PP—5 boilers, total 1515 H. P., and 2 pumps.
EMP—848.

Sloan Mines.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—16 Elec. loco.
PP—Boilers total 160 H. P., 1 gen. unit and 1 pump.
EMP—1084.

Storrs Mines.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. L. & W.
S of H—21 Elec. and 5 steam loco.
PP—8 boilers, total 3,150 H. P., 6 gen. units, and 3 pumps.
EMP—1892.

Taylor Mines.
PO—Taylor, Pa.; SP—Same, CTY—Lackawanna. RR—D. L. & W.
S of H—12 elec. locos.
PP—10 Boilers, total 1300 H. P., 1 gen. unit and 2 pumps.
EMP—850.

Truesdale Mines.
PO—West Nanticoke, Pa.; SP—Same, CTY—Luzerne; RR—D. L. & W.
S of H—29 Elec. and 1 steam loco.
PP—6 Boilers, total 1818 H. P., 2 gen. units, 5 comp. and 3 pumps.
EMP—2,000.

Woodward Mine.
PO—Kingston, Pa.; SP—Same, CTY—Luzerne; RR—D. L. & W.
S of H—1 Steam and 16 Elec. loco.
PP—11 Boilers, 2875 H. P., 6 gen. units and 2 pumps.
EMP—1,781.

Washeries.
Bellevue, Archbald, Cayuga, Diamond, Hampton, Hyde Park and Storrs.
PO—Scranton, Pa.
EMP—391.

DODSON COAL CO.

General Office, Bethlehem, Pa.
Morea Colliery, Shaft, Slope and Stripping; Mammoth, Skidmore, Buck Mtn. and 7 ft. Seam, 36 to 900 in. thick.
PO—Morea Colliery, Pa. SP—Morea, Pa. CTY—Schuylkill; RR—P. R.R. and L. V.
PR—Chas. M. Dodson, Bethlehem, Pa.
TR—Josiah Bachman, " "
GM—T. M. Dodson, " "
GS—J. B. Connell....Morea Colliery, Pa.
PA—J. P. Malloy, " "
EM—W. M. Reed, " "
MM—H. D. Lattimore, " " "
EE—Thomas Blackwell, " " "
MS—Wm. A. McGinley, " "
S of H—6 Elec. loco., mules, rope and gravity.
S of M—Hand.

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PP—22 Return tubular boilers, total 2,200 H.P., 1 gen. unit, 275 volts D. C., 2 air compressors, 5 pumps. also purchase power.
EMP—600. Last fiscal year output 383,000 tons.
Sales Agents, Weston Dodson & Co., Bethlehem, Pa.

DODSON, CHAS. M. CO.
General Office, Bethlehem, Pa.
Beaver Brook Colliery; Slope and Stripping; Mammoth, Wharton, Buck Mtn., Lykens and Gamma Seam, 24 to 600 in. thick.
PO—Beaver Brook, Pa.; SP—Aud nreld, Pa.; CTY—Luzerne RR—L. V. C. R. R. of N. J.
PR—Charles M. Dodson...Bethlehem, Pa.
TR—F. C. Stout, " "
GM—T. M. Dodson, " "
PA—P. J. Malloy....Morea Colliery, Pa.
GS—J. B. Connell....Beaver Brook, Pa.
MM—Frank Mcikrantz..Beaver Brook, Pa.
MS—F. W. Packer....Beaver Brook, Pa.
EM—Stephen Long....Beaver Brook, Pa.
EE—Lewis Miller, " "
SCO—Chas. M. Dodson & Co., Buyer, Vincent Larkin, Beaver Brook, Pa.
S of H—Mules, rope, gravity, 2 Elec., 2 Steam, and 1 Gasoline loco.; track gauge 48 in.
S of M—Hand and comp. air machines.
PP—25 Return tubular boilers total 3600 H. P., 19 engines, 1,440 H. P., 2 compressors, 9 pumps.
EMP—750. Sales Agent, Weston Dodson & Co., Bethlehem, Pa.

DOLPH COAL CO.
General Office, Scranton, Pa.
Dolph Mine; Slope and Drifts; Dunmore Seam, 3 to 8 ft. thick; operate washery.
PO—Jessup, Pa.; SP—Same and Peckville, Pa.; CTY—Lackawanna; RR—Erie.
PR—W. G. Payne.....Kingston, Pa.
TR—Isaac P. Hand..Wilkes-Barre, Pa.
GM—W. G. Robertson..Scranton, Pa.
PA—W. G. Robertson, " "
MS—W. G. Robertson, " "
SM—H. C. Lindeman.....Jessup, Pa.
S of H—4 Elec., 3 steam locos. and mules; track gauge 36 in.
S of M—Hand.
PP—8 Water tube, 2 return tubular boilers, total 3000 H. P.
EMP—557.

EAST BEAR RIDGE COLLIERY CO.
General Office, Maryland Trust Bldg., Baltimore, Md.
East Bear Ridge Mine; Drift and Slope; Mammoth, Top Split, Big and Little Buck, Skidmore and Seven Foot of the Ellangowan Basin Seam, 36 to 960 in. thick.
PO—Mahanoy Plane, Pa.; SP—Same; CTY—Schuylkill; RR—P. & R.
PR—S. G. B. Cook, Baltimore, Md.
TR—Grafflin Cook, " "
GM—D. R. James, ..Shenandoah, Pa.
PA—B. F. James, " "
EM—James H. Pierce, Frackville, Pa.
EE—Thomas Guinther, " "
S of H—3 Elec., 1 comp. air loco.; track gauge 48 in.
S of M—6 Comp. air mach. and hand.
PP—7 Lekanon Iron Works return tubular boilers, total 1,150 H.P., 1 gen. unit 250 volts D.C., 1 compressor, 3 pumps. Power purchased.
EMP—400.

EAST BEAR RIDGE COAL CO.
Stripping, Mammoth Seam.
PO—Mahanoy City, Pa.; CTY—Schuylkill; RR—P. & R.
GM—David R. James, Shenandoah, Pa.

EAST BOSTON COAL CO.
East Boston Mine; Shaft; Anthracite Seam. Operate Washery.
PO—Kingston, Pa.; SP—Same and Luzerne, Pa. CTY—Luzerne. RR—D. L. & W., L. V
PR—W. G. Payne.....Kingston, Pa.
TR—W. T. Payne, " "
GM—W. T. Payne, " "
PA—W. T. Payne, " "
GS—W. T. Payne, " "
EM—Chas. Miles ....Wilkes-Barre, Pa.
EE—H. H. Riley.....Forty Fort, Pa.
S of H—Mules, rope and comp. air; track gauge 28 in.
S of M—Hand.
PP—8 Water tube boilers, total 2,000 H.P., 2 gen. units, 500 volts D.C., 6 pumps delivering water to surface and 2 compressors.
EMP—687. Last fiscal year output 211,000 tons.
Sales Agent, W. T. Payne, Kingston, Pa.

EAST LEHIGH COLLIERY CO.
East Lehigh Mine, Slope, Mammoth, Buck Seams, 18 ft. thick.
PO—Tamaqua; SP—Same; CTY—Schuylkill; RR—P. & R. and L. & N. E., Branch.
PR—E. M. B. Shepp.....Tamaqua, Pa.
GM—E. M. B. Shepp, " "
GS—J. H. Shepp, " "
PA—J. H. Shepp, " "
SM—J. H. Shepp, " "
MS—D. B. Davis, " "
S of H—Mules.
S of M—Comp. air and hand; 2 comp. ressors, 3 pumps.
PP—3 Return tubular boilers, total 650 H.P.
EMP 160. Last fiscal year output 75,000 tons.
Sales Agent, J. H. Shepp, Tamaqua, Pa.

EAST MOUNTAIN COAL CO.
Connell Junction, Pa.

EASTERN PENNSYLVANIA COAL CO.
General Office, 20 Nassau Street, New York, N. Y.
Silver Hill Mine; Slope and drift: Buck Mountain Seam, 38 to 192 in. thick.
PO—Middleport, Pa.; SP—Same; CTY—Schuylkill; RR—P. & R.
PR—C. O. Maillour, New York, N.Y.
TR—James J. Reilly, " "
GM—Earnest P. Fink, Middleport, Pa.
PA—Earnest P. Fink, " "
MS—Earnest P. Fink, " "
SCO—Middleport Supply Co " "
CE—L. J. Boyd, ...Keyport, N.J.
S of H—2 Steam loco.; track gauge 36 in.
S of M—Hand.
PP—5 H. M. Sciple & Co. return tubular boilers, total 430 H.P.; 2 pumps.
EMP—70. Last fiscal year output 27,504 tons.
Sales Agent, Lionel Van Pelt, 20 Nassau St., New York, N.Y.
Successors to the Phillips Bros. Coal Co.

ELLIOTT-McCLURE & CO.
Sold to the Pennsylvania Coal Co.

ELLSWORTH COAL MINING CO.
Ellsworth Mine; Slope and Stipping; Church, Crosby, Mammoth, Skidmore and Buck Mtn. Seams, 864 to 1,032 in. thick.
PO—Pottsville, Pa.; SP—Minersville, Pa.; CTY—Schuylkill; RR—P. & R.
PR—G. M. Keiser....Minersville, Pa.
GM—G. M. Keiser, " "
PA—G. M. Keiser, " "
GS—G. Jenkins, " "
MS—G. Jenkins, " "
TR—C. D. Norton....Philadelphia, Pa.
S of H—4 Steam loco.; track gauge 36 in.
S of M—6 Comp. air mach.
PP—4 Return tubular boilers, 2 compressors, 3 pumps.
EMP—200. Last fiscal year output, 100,000 tons.

EMPEROR COAL CO.
Slopes, Primrose Seam 8-10 ft. thick.
PO—Minersville, Pa.; SP—Lytle, Pa.; CTY—Schuylkill.
RR—P. R. R.
PR—Geo. M. Keiser, Minersville, Pa.
GM—Geo. M. Keiser, " "
GS—Geo. M. Keiser, " "
S of H—Steam loco. and mules, Track gauge 36 in.
S of M—Hand.
PP—Boilers 300 H. P.

ENTERPRISE COAL CO., THE
General Office, Scranton, Pa.
Enterprise Mine, Slope and Shaft. Anthracite Seam, 4½ ft. to 9 ft. thick.
PO—Excelsior, Pa.; PP—Same and Fulton, Pa.; CTY—Northumberland, RR—P. & R., and P. R. R.
PR—W. H. Gearhart....Scranton, Pa.
TR—H. A. Connell, " "
PA—H. A. Connell, " "
GM—W. L. Connell, " "
MS—Edward X. Brennan..Excelsior, Pa.
MM—Geo. W. Horne, " "
EE—Henry Swisher, " "
SCO—The Anthracite Store Co., Buyer, Jas. J. Holland, Excelsior, Pa.
S of H—5 Elec. loco. and mules; track gauge 44 in.
S of M—Hand.
PP—10 Water tube boilers, total 2,500 H.P., 2 gen. units, 250 volts D. C., 4 pumps.
EMP—260. Last fiscal year output 79,331 tons.
Sales Agent, P. & R., C. & I. Co.

EVANS COLLIERY CO.
Evans Mine; Slope; Buck Mtn., Upper and Lower Gamma Seam, 72 to 180 in. thick.
PO—Beaver Meadows, Pa.; SP—Same; CTY—Carbon; RR—Lehigh Valley.
TR—Gwillyn Edwards.....Luzerne, Pa.
GM—A. Fred Bredbenner, Beaver Meadows, Pa.
GS—A. Fred Bredbenner, Beaver Meadows, Pa.
PA—A. Fred Bredbenner, Beaver Meadows, Pa.
MM John Rickenbaucker, Beaver Meadows, Pa.
S of H—Mules and rope; track gauge 30 and 36 in.
S of M—Hand.
PP 2 Sterling water tube boilers, 700 H. P., 4 pumps. Purchase power.
EMP—135. Last fiscal year output 29,000 tons.
Sales Agent, East Boston Coal Co., Kingston, Pa.

EXCELSIOR COAL CO.
Corbin Mine; Slope.
PO—Shamokin, Pa.; SP—Same; CTY—Northumberland; RR—P. & R.
GS—Geo. W. Robertson....Shamokin, Pa.
MS—Geo. W. Robertson...Shamokin, Pa.
S of H—4 Elec. loco. and mules.
PP—32 boilers, 1172 H. P., 3 pumps.
EMP—565. Last fiscal year output 234,086 tons.

FALLBROOK COAL CO. (Est. John Murrin)
Fallbrook Colliery, Drift, Clark Seam, 7 to 15 ft. thick.
PO—Carbondale, Pa. SP—Same. CTY—Lackawanna; RR—O. & W.
GM—Frank Murrin ....Carbondale, Pa.
MS—Frank Murrin.....Carbondale, Pa.
PA—John Murrin, " "
S of H—Mules and 1 Steam loco.; track gauge 30 in.
S of M—Hand.
PP—Boiler, 150 H. P.
EMP—32. Last fiscal year output 6,570 tons.

FORTY-FORT COAL CO.
See Temple Coal Co.

GIRARD MAMMOTH COAL CO.
Girard Mammoth Mine, Slope, Drifts and Strippings, Mammoth and Buck Mtn, Seam 180 to 264 in. thick.
PO—Raven Run, Pa.; SP—Girardville and Shenandoah, Pa.; CTY—Schuylkill; RR—P. & R. and L.V.
PR—Timothy Cockill, Mahanoy City, Pa.
GM—Timothy Cockill, " " "
TR—Timothy Cockill, " " "
PA—Timothy Cockill, " " "
MS—William Palmer, " " "
EM—Wm. S. Pugh.....Pottsville, Pa.
EE—V. Dougherty.....Raven Run, Pa.
S of H—Mules, 3 Elec. and 10 Steam loco.; track gauge 30, 40, 48 in.
S of M—Hand.
PP—5 Water tube and 3 return tubular boilers, total 1,600 H.P., 1 gen. unit, 175 volts D. C., 5 pumps.
EMP—447. Last fiscal year output 222,048 tons.
Sales Agencies, H. H. Lineweaver & Co., Inc., Philadelphia, Pa., and Evans Coal Co., Fort Wayne, Ind.

GORMAN & CAMPION
General Office, Mahanoy City, Pa.
Bell Mine; Drift; Mammoth Seam, 432 to 1152 in. thick.
Seam 36 to 96 ft. Thick.
PO— Tuscarora, Pa.; SP—Same; CTY—Schuylkill; RR—P. & R.
PR—Patrick J. Campion, Mahonoy City, Pa.
TR—C. O. Smith, " "
GM—Daniel I. Slattery.
PA—Daniel I. Slattery.
GS—Daniel I Slattery.
MM—Chas. Alinsky.....Tuscarawas, Pa.
MS—John J. Kane, " "
SCO—Slattery Bros., Tuscarora, Pa., Buyer, Daniel I. Slattery.
S of H—Mules; track gauge 40 in.
S of M—Hand.
PP—2 Heine Water tube boilers, 350 H. P., and 1 compressor.
EMP—75. Last fiscal year output 27,000 tons.
Sales Agents, Slattery Bros., Phila., Pa.

GREENOUGH RED ASH COAL CO.
Greenough Colliery, Shaft, Slope and Drift.
PO—Keiser, Pa.; CTY—Northumberland; RR—P. R. R.
PR—M. W. O'Boyle .. Pittston, Pa.
TR—Geo. C. Graeber....Shamokin, Pa.
GM—Edward Brennan, " "
PA—F. A. Gable, " "
S of H—4 Elec. loco.
S of M—Hand.
PP—8 Boilers, total 1,300 H.P., 2 gen. units, 1 compressor, 3 pumps.
EMP—598. Last fiscal year output 244,603 tons.

GREEN RIDGE COAL CO.
Green Ridge Colliery, Slope, Dunmore Seam, 3 to 4½ ft. thick.
PO—Scranton, Pa. SP—Same. CTY—Lackawanna. RR—Erie.
PR—W. L. Connell, .. Scranton, Pa.
GM—W. L. Connell, " "
TR—H. A. Connell, " "
PA—H. A. Connell, " "
MS—A. L. Griffen, " "
EM—C. S. Meeks, " "
MM—Thomas Bowser, " "
EE—Frank Murphy, " "
S of H—Mules, rope and elec. Track gauge 36 in.
S of M—Hand
PP—9 Water tube, National, boilers, total 1,125 H. P. Also power purchased.
EMP—250. Last fiscal year output 97,739 tons. Sales agency, Williams & Peters No. 1, Broadway, New York, N. Y.

HADDOCK MINING CO.
General Office, Wilkes-Barre, Pa
Black Diamond Mine, Slope
PO—Luzerne, Pa.; SP—Same; CTY—Luzerne; RR—L. V., D. L. & W.
PR—Carleton C. Jones, Wilkes-Barre, Pa.
TR—Thos. R. Phillips, " "
GM—Thos. R. Phillips, " "
PA—Thos. R. Phillips, " "
GS—Gilbert S. Jones, " "
MS—Gilbert S. Jones, " "
EM—Smith & Wells, " "
SCO—Haddock Supply Co., Luzerne, Pa.
S of H—1 Elec. loco., mules and rope
S of M—Hand.
PP—3 Water, 12 return tubular boilers, total 2,600 H. P., 3 compressors. 3 pumps. Power purchased.
EMP—550. Last fiscal year output 187,225 tons.
Formerly the Black Diamond Mine of the Plymouth Coal Co.

HARLEIGH-BROOKWOOD COAL CO.
Stanton, Lawrance and West Bear Ridge Mines; Slopes; Skidmore, Buck Mtn., Mammoth and Holmes Seams.
PO—Mahanoy Plane, Pa.; SP—Same; CTY—Schuylkill; RR—P. & R.
PR—Percy C. Madeira, Philadelphia, Pa.
TR—Louis C. Madeira, " "
GM—Frank A. Hill.....Pottsville, Pa.
PA—Frank A. Hill, " "
GS—James Reese.....Frackville, Pa inside, Shenandoah, Pa.
EM—Chas. Graff .....Pottsville, Pa.
MM Frank Meyer and George Bundlebaugh, Frackville, Pa.
S of H—3 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers,, 3 air compressors and 5 pumps.
EMP—1,200. Sales Agent, Madeira, Hill & Co., Philadelphia, Pa.

HARWOOD COAL CO.
General Office, 437 Chestnut St., Philadelphia, Pa.
Harwood Mine; Slope; Mammoth, Four Foot Wharton, Gamma, Buck Mtn. Seam, 36 to 324 in. thick. Operate Washery.
PO—Harwood, Pa.; SP—Same; CTY—Luzerne; RR Lehigh Valley.
PR—S. D. Warriner....Philadelphia, Pa.
VP—E. Ludlow.....Lansford, Pa.
VP—H. F. Baker.....Philadelphia, Pa.
SECY Henry Lodge, " "
TR—H. H. Pease, " "
PA—E. Hughes, " "
GM—Hugh M. Crankshaw..Harwood, Pa.
MS—J. Panco, " "
MM—John Beach, " "
SCO—Harwood Store Co., Harwood Pa., Buyer, Chas. R. Williams, Harwood, Pa.
S of H—Mules, Elec and 3 Steam loco; track gauge 48 in.
S of M—Hand.
PP—1 compressor and 10 pumps. Buy Elec. and Steam power.
EMP—500. Last fiscal year output, 209,000 tons.
Sales Agent, Swain Bros, Philadelphia, Pa.; Whitney & Kemmerer, New York, N. Y.

HAZLE MOUNTAIN COAL CO.
Hazle Mountain Mine, Slope, Mammoth, Seam 10 to 20 ft. thick.
PO—Hazleton, Pa.; SP—Conyngham; CTY—Luzerne; RR—Lehigh Val.
PR—W. R. McTurk...Philadelphia, Pa.
GM—Morton H. McTurk, Hazleton, Pa.
PA—Morton H. McTurk, " "
MS—J. J. Turnbach.....Hazleton, Pa.
S of H—Mules and steam loco.; track gauge 36 in.
S of M—Hand and compressed air.
PP—4 Water tube, and 4 return tubular boilers, total 1,500 H.P., 2 air compressors, 5 pumps.
Sales Agents, W. R. McTurk & Co., Philadelphia, Pa.

HILLSIDE COAL & IRON CO.
General Office, 50 Church St., New York, N. Y.
PA—W. R. Collins....New York, N. Y.
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HILLSIDE COAL & IRON CO.—Continued.
PR—W. A. May.....Scranton, Pa.
TR—F. H. Wright, " "
GM—Wm. W. Inglis, " "
CE—Alexander Bryden, " "
EM—C. W. F. Neuffer, " "
EE—M. C. Walthall, " "
DS—J. P. Jennings, " "
DS—W. P. Jennings, " "
Sales Agent, Williams & Peters, No. 1 Broadway, New York, N. Y.

Forest City Mine, Shaft and Slope.
PO—Forest City, Pa. SP—Same. CTY—Susquehanna. RR—Erie.
MS—H. E. Yewens, .. Forest City, Pa.
S of H—16 elec., 5 steam locos, gravity and mules.
S of M—Hand.
PP—28 return tubular boilers, total 3,450 H. P., gen. units, 275 volts D. C., 6 pumps.
EMP—1,365. Last fiscal year output 515,637 tons.

Erie Mine, Shaft, Marcy and Clark Seams.
PO—Mayfield, Pa. SP—Same. CTY—Lackawanna. RR—Erie.
MS—H. E. Yewens, .. Forest City, Pa.
S of H—2 Elec., 3 steam locos., gravity and mules.
S of M—Hand.
PP—12 return tubular boilers, total 1,185 H. P., gen. units 300 K. W., 275 volts D.C., 1 compressor, 9 pumps.
EMP—338. Last fiscal year output 159,873 tons.

Butler Mine, Slopes and shaft, Pittston, Marcy and Red Ash Seams.
PO—Pittston, Pa. SP—Same. CTY—Luzerne. RR—Erie.
MS—David Grivin.....Pittston, Pa.
S of H—23 elec., 9 steam locos., gravity and mules.
S of M—Hand.
PP—22 return tubular boilers, total 3,300 H. P., gen. units, 220 volts A. C., 670 K. W., 275 volts D. C., 6 pumps.
EMP—1,483. Last fiscal year output 636,675 tons.

Consolidated Mine, Slope and shaft, Clark and Red Ash Seams.
PO—Avoca, Pa. SP—Same. CTY—Luzerne. RR—Erie.
S of H—2 steam locos., gravity and mules.
S of M—Hand.
PP—8 return tubular boilers, total 800 H.P., gen. unit 275 volts D.C., 1 pump.
EMP—376. Last fiscal year output 149,352 tons.

HUDSON COAL CO. (THE)
General Office, Scranton, Pa.
PR—L. F. Loree.....New York, N. Y.
VP —(In charge of operations)
W. H. Williams....New York, N. Y.
TR—Talbot Olyphant, " "
GS—C. C. Rose.....Scranton, Pa.
Asst. Supt.—Chas. Dorrance, " "
PA—A. M. Fine, " "
Sales Agency, The Hudson Coal Co.

Clinton Mine—Slope, Grassy Island, Top, Bottom and Clifford Seams, 24 to 72 in. thick. Operate Washery.
PO Vandling, Pa.; SP—Carbondale, Pa.; CTY—Lackawanna; RR—D. & H.
MF Fred Smith.....Vandling, Pa.
S of H—3 Steam and 1 Elec. loco., mules, rope and gravity; track gauge 30 in.
S of M Hand.
PP—4 Stirling, 1 loco type boilers, total 1205 H. P.; gen. units 275 D. C, 440 volts A. C., 3 phase, 60 cycles, 7 pumps.
EMP—804. Last fiscal year output 446,232 tons.

Clinton Washery.
PO—Vandling, Pa.; SP—Carbondale, Pa.; CTY Wayne and Lackawanna; RR—D. & H.
MF—Adolph Arnold.....Vandling, Pa.
PP Power from Coal Brook Mine
EMP—5. Last fiscal year output 33,-950 tons.

Greenwood Mine—Shaft, Checker, Dunmore Nos. 2 and 3, and New County Seams, 30 to 48 in. thick. Operate Washery.
PO Minooka, Pa.; SP Same; CTY—Lackawanna RR—D. & H.
MF—T. R. Loverling....Minooka, Pa.
S of H—1 Steam loco., mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—11 Cylinder type, 6 loco type return tubular boilers, total 2060 H. P., 1 gen. units 2300 volts A. C., 2 compressors, 6 pump
EMP—961. Last fiscal year output [illegible] tons.

Greenwood Washery.
PO—Minooka, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
MFThos. R. Loverling....Minooka, Pa.
EMP—14.

Jermyn Washery.
PO—Jermyn, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
MF—James A. O'Malley....Jermyn, Pa.
EMP—31. Last fiscal year output, 21,-540 tons.

Laflin Mine—Shaft, Marcy and Red Ash Seam, 30 to 36 in. thick.
PO—Laflin, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—O. M. Hobbs.....Laflin, Pa.
S of H—1 Steam loco., mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—9 Return tubular boilers, total 1090 H. P., 2 compressors, 2 pumps.
EMP—579. Last fiscal year output 201,116 tons.

Langcliffe Mine—Shaft, Stark, Red Ash, and Checker Seams. 36 to 72 in. thick. Operate Washery.
PO—Avoca, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—M. C. Holloran.....Avoca, Pa.
S of H—Mules, rope and gravity track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 735 H. P., 1 compressor, 4 pumps.
EMP—293. Last fiscal year output 118,980 tons.

Leggitts Creek Washery.
PO—Scranton, Pa.; SP—Providence, Pa.; CTY—Lackawanna. RR—D. & H.
MF—James Allan.....Scranton, Pa.
EMP—22.

Marvine Washery.
PO Scranton, Pa.; SP—Providence, Pa.; CTY—Lackawanna; RR—D. & H.
MF—George B. Nicol.....Scranton, Pa.
PP—2 Stirling water tube boilers, total 540 H. P.
EMP—31. Last fiscal year output 25,-048 tons.

Pine Ridge Mine—Shaft, Kidney, Rock, Hillman, Cooper, Bennett, Checker, Ross, Three Foot and Red Ash Seams, 24 to 96 in. thick. Operate Washery.
PO—Parsons, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—Wilson Smith.....Parsons, Pa.
S of H—12 Elec. loco., mules, rope and gravity.
S of M—Hand.
PP—6 Stirling water tube boilers, total 2778 H. P., gen. unit 275 volts D. C., 2 compressors, 4 pumps. Power from Baltimore Mine Elec. plant.
EMP—1207. Last fiscal year output 507,377 tons.

Plymouth No. 2 Washery.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—W. E. Steever.....Plymouth, Pa.
EMP—25. Last fiscal year output 967 tons.

Plymouth No. 3 Washery.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerne; RR—D. & H.
MF—John D. Grimes.....Plymouth, Pa.
EMP—30. Last fiscal year output 26,311 tons.

Plymouth No. 5 Washery.
PO—Plymouth, Pa.; SP—Same CTY—Luzerne; RR—D. & H.
MF—James H. Becker....Plymouth, Pa.
EMP 35.

Von Storch Washery.
PO Scranton, Pa.; SP—Green Ridge, Pa.; CTY—Lackawanna; RR—D. & H.
MF—L. A. Reese.....Scranton, Pa.
EMP—40. Last fiscal year output 17,-905 tons.

HUMBERT COAL COMPANY.
Sunnyside Mine, Drift, Dunsmore & Clark Seam, 24 and 72 in. thick.
PO—Jessup, Pa. SP—Same. CTY—Lackawanna. RR Erie., Sunnyside Switch.
PR—J. J. C. Humbert, Madison, N. J.
TR—W. C. Humbert .....Jessup, Pa.
GM—W. C. Humber.....Jessup, Pa.
GS—M. S. Loftus, " "
PA—B. R. Davis.....Jessup, Pa.
EM—T. J. Richards, .. Scranton, "
S of H—Mules and 2 elec. locos. Track gauge 36 in.
S of M—Hand.
PP—3 return tubular boilers, total 250 H. P.
EMP—150. Last fiscal year output 36,246 tons Sales Agent, E. W. Swingle, Peckville, Pa.

JERMYN & COMPANY.
Jermyn No. 1 Mine, three Shafts, three Slopes, "Dunmore" Seam, 4½ ft. thick.
PO—Rendham, Pa. SP—Taylor, Pa., and Old Forge, Pa. CTY—Lackawanna. RR—D. L. & W., Erie, Lehigh Valley.
GM—E. B. Jermyn....Scranton, Pa.
PA—E. B. Jermyn, " "
GS—John Corcoran, ..Rendham, "
EM—Leon Whaite, " "
SCO—Rendham Store Co., " "
Buyer, H. H. Henshal, " "
S of H—Mules, rope and 1 gasoline locomotive.
S of M—Hand.
PP—4 water tube boilers, total 2,000 H.P., 2 pumps.
EMP—959. Last fiscal year output 507,620 tons.

KEMMERER, M. S. & CO.
Sandy Run Mine, Slope.
PO—Sandy Run, Pa SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
PR—M. S. Kemmerer, Sandy Run, Pa.
GM—M. S. Kemmerer, " "
GS—J. P. Powell, " "
PA—J. P. Powell, " "
SM—J. P. Powell, " "
MM—John Hauze, " "
S of H—1 steam loco. and mules.
S of M—Hand.
PP—4 boilers, total 780 H. P.
EMP—281.

KINGSTON COAL CO. THE
PR—W. B. Chamberlain Torresdale, Philadelphia, Pa.
TR—E. W. Dwight, 407 Samson St., " "
GM—F. E. Zerbey, ... Kingston, "
GS—F. E. Zerbey, " "
PA—F. E. Zerbey, " "
EM—G. O. Willits, " "
MM—E. L. Solomon, " "
EE—W. H. Bradbury, " "

No. 4 Colliery, Shafts, Slopes and Tunnels, various Seams, 2 to 12 ft. thick.
PO—Kingston, Pa. SP—Same. CTY—Luzerne. RR—D. & H., P. R. R., D. L. & W., L. V.
MS—T. H. Williams, ..Kingston, Pa.
S of H—Mules, rope, 1 Steam and 4 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—12 B. & W. water tube and 2 return tubular boilers, total 3,900 tons, 3 gen. units 250 volts D. C., 1 compressor, 6 pumps.
5 pumps.
EMP—1,270. Last fiscal year output 701,953 tons.

No. 2 Colliery, Shafts, Slopes and Tunnels, various Seams, 5 to 12 ft. thick.
PO—Kingston, Pa. SP—Same. CTY—Luzerne. RR—D. H. & P. R. R., D. L. & W., L. V.
MS—T. H. Williams, Kingston, Pa.
S of H—Mules, rope, 1 Steam, and 4 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—6 B. & W. water tube and 3 return tubular boilers, total 2,250 H. P., 1 pump.
EMP—1,406. Last fiscal year output 773,357 tons.

Gaylord Colliery, Shaft and Slope, various Seams, 2 to 12 ft. thick.
PO—Plymouth, Pa. SP—Same. CTY—Luzerne. RR—D. & H., P. R. R., D. L. & W.
MS—R. A. Smith, .. Plymouth, Pa.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—4 B. & W. boilers, total 1,200 H. P., 1 gen. unit 250 volts D. C. 1 Cross compound air compressor, 2 pumps.
EMP—467. Last fiscal year output 232,246 tons.

LACKAWANNA COAL CO., LTD.
See Temple Coal Co.

LEE, GEORGE F., COAL CO.
General Office, 1200-04 Miners Bank, Wilkes-Barre, Pa.
Chauncey Mine, Slope, Drift and Stripping, Red Ash Seam, 21 to 27 in. thick.
PO—Plymouth, Pa.; SP—Same. CTY—Luzerne; RR—D. L. & W., Bloomsburg, Div.
PR—N. W. Martz.....Plymouth, Pa.
TR—George F. Lee, " "
GM—George F. Lee, " "
GS—George F. Lee, " "
PA—Evans H. Jones, " "
MS—Benjamin J. Amos, " "
CE—Chas. A. Miles....Wilkes-Barre, Pa.
SCO—George F. Lee & Co., Buyer, N. W. Martz.
S of H—Mules, rope, 2 Steam loco. and gravity; track gauge 42 in.
S of M—Hand.
PP—5 Water tube boilers.
EMP—370. Last fiscal year output 135,612 tons.

LEHIGH COAL & NAVIGATION CO.
General Office, 437 Chestnut St., Philadelphia, Pa.
PR—S. D. Warriner....Philadelphia, Pa.
TR—H. H. Pease, " "
VP—R. H. Wilbur, " "
Secy—H. F. Baker, " "
Asst Secy—Henry Lodge, " "
Asst Secy—R. V. Pierce, " "
Compt—E. M. Reynolds, " "
Asst Compt—J. C. Campbell, Philadelphia, Pa.
PA—E. Hughes, " "
Asst PA—J. R. Bennington, " "
Real Estate Agent—J. L. Sone, Philadelphia, Pa.
VP—E. Ludlow.....Lansford, Pa.
Asst VP—E. H. Suender....Lansford, Pa.
MS—W. G. Wilden, " "
Chief Eng—J. B. Warriner, " "
MM—R. E. Hobart, " "
Supt. of Preparation—A. Leonarz, Lansford, Pa.
Gen Sales Agt—R. T. Davies, Philadelphia, Pa.
Asst Sales Agent—C. H. Dayton, Philadelphia, Pa.

Nesquehoning, Shafts, slopes, drifts and strippings, 3 to 50 ft. thick.
PO—Nesquehoning, Pa. SP—Same. CTY—Carbon. RR—C. R. R. of N. J. and L. & N. E.
DS—F. B. Nold, ... Lansford, Pa.
S of H—14 elec., 11 steam locos., rope and mules. Track gauge 42 in.
S of M—Hand and comp. air.
PP—19 water tube, Sterling and B. & W. boilers, total 3,774 H. P., 1 comp. and 1 pump.
EMP—1,799. Last fiscal year output 875,915 tons.

Lansford Mine, Shafts, slopes and drifts, Seams 3 to 50 ft. thick.
PO—Lansford, Pa. SP—Same. CTY—Carbon. RR—L. & N. E.
DS—M. O. Morgans.....Lansford, Pa.
S of H—21 elec. 9 steam locos., mules and rope. Track gauge 42 in.
S of M—Hand and comp. air mach.
PP—34 water tube, Sterling boilers, total 7,232 H. P., 4 compressors and 1 pump.
EMP—2,319. Last fiscal year output 1,001,659.17 tons.

Coaldale, Shaft, slope, drift and stripping Seams, 3 to 50 ft. thick. Operate washery.
PO—Coaldale, Pa. SP—Same. CTY—Schuylkill. RR—L. & N. E.
DS—E. J. Jones.....Lansford, Pa.
S of H—12 elec., 9 steam locos., rope and mules. Track gauge 42 in.
S of M—Hand and comp. air mach.
PP—28 water tube Sterling boilers, total 5,448 H. P., 4 compressors.
EMP—1,533. Last fiscal year output 795,645 tons. Washery. 87,286 tons.

Greenwood, Shaft, slope, drift and stripping Seams, 3 to 60 ft. thick. Operate washery.
PO—Seek, Pa. SP—Same. CTY—Schuylkill. RR—L. & N. E.
DS—T. J. Jenkins, .. Lansford, Pa.
S of H—8 elec. and 3 steam locos., rope and mules. Track gauge 42 in.
S of M—Hand and comp. air.
PP—16 water tube Sterling B. & W. boilers, total 4,800 H. P., 1 compressor.
EMP—1,085. Last fiscal year output 406,198 tons. Washery, 10,073 tons.

Rahn, Shaft and Stripping, Seam 3 to 30 ft. thick.
PO—Seek, Pa. SP—Same. CTY—Schuylkill. RR—L. & N. E.
DS—T. J. Jenkins, ... Lansford, Pa.
S of H—7 Elec and 1 Steam loco.; track gauge 42 in.
S of M—Hand and comp. air.
PP—1 comp. and 1 pump.
EMP—854. Last fiscal year output 426,421 tons.

Tamaqua Mine, Shaft, Seams 3 to 30 ft. thick.
PO—Tamaqua, Pa. SP—Same. CTY—Schuylkill. RR—L. & N. E.
DS—T. J. Jenkins.....Tamaqua, Pa.
S of H—6 elec., 2 steam locos., mules and rope. Track gauge 42 in.
S of M—Hand and comp. air.
PP—10 water tube Sterling boilers, total 2,700 H. P., 3 compressors.
EMP—760. Last fiscal year output 396,823 tons.

LEHIGH VALLEY COAL CO.
PO—Wilkes-Barre, Pa.
PA—Mr. McQuade.
50 Church St., New York, N. Y.
Continued on Next Page.

MISSING CATALOGUES

GM—F. M. Chase.....Wilkes-Barre, Pa.
GS—Thomas Thomas, " "
EM—John Humphrey, " "
MM—Paul Sterling, " "
EE—C. W. Beers, " "
DS—William Reidelhuber, " "
Supt. of Drifton Shafts—Wm. Campbell, Wilkes-Barre, Pa.
Efficiency Eng—John Lloyd, Wilkes-Barre, Pa.

Mineral Spring and Heidelburg No. 1 Mines, Shaft and Drift. RR—L. V.
S of H—2 steam locos. and mules.
S of M—Hand.
PP—18 boilers, total 2,800 H. P., 8 pumps.

Exeter, Maltby and Westmoreland Mines, Shafts. RR—L. V.
S of H—6 comp. air, 9 elec. and 2 steam locos., mules.
S of M—Hand.
PP—20 boilers, total 4,812 H. P., 18 pumps, 1 air comp.

Dorrance, Franklin and Prospect Mines, Slope. RR—L. V.
S of H—2 comp. air, 14 elec. and 14 steam locos., mules.
S of M—Hand.
PP—44 boilers, total 9,400 H. P., 11 air comp., 13 pumps.

Hazelton No. 1, Hazelton Shaft and Spring Mt. & Spring Brook Mines, Shaft and slope, RR—L. V.
S of H—14 elec. and 9 steam locos. and mules.
S of M—Hand.
PP—58 boilers, total -9,220 H. P., 1 air comp., 21 pumps.

Primrose and Park No. 2 Mines, Slope. RR—L. V.
S of H—5 elec. and 6 steam locos. and mules.
PP—29 boilers, total 6,550 H. P., 2 air comp., 8 pumps.

Packer Nos. 2, 3 and 4 Mines, Slope. RR—L. V.
S of H—7 elec. and 5 steam locos., mules.
S of M—Hand.
PP—20 boilers, total 4,200 H. P., 8 pumps.

Centralia and Packer No. 5 Mines, Slope and Shaft. RR—L. V.
S of H—13 elec. and 4 steam locos. and mules.
S of M—Hand.
PP—39 return tubular boilers, total 4,455 H. P., 1 air comp., 3 pumps.

Sayre Mine, Shaft and Slope. RR—L. V.
S of H—6 elec. and 4 steam locos and mules.
S of M—Hand
PP—13 boilers, total 2,900 H. P., 1 air comp., 7 pumps.

Blackwood and Buck Mountain Mines. RR—L. V.
S of H—5 elec. and 4 steam locos. and mules.
S of M—Hand
PP—33 boilers, total 3,755 H. P., 2 air comp., 6 pumps.

Stevens Mine.
RR—L. V.
S of H—2 elec. locos.
S of M—Hand.
PP—8 boilers, total 1,475 H. P., 3 pumps.

Drifton Mine.
CTY—Luzerne.
S of H—4 comp. air and 7 steam loco.
PP—22 boilers, total 4,950 H. P., 3 pumps.
EMP—594. Last fiscal year output 313,645 tons.

Deringer, Gowen and Tombicken Mines.
CTY—Luzerne.
S of H—2 comp. air, 7 steam loco.
PP—14 boilers, total 2,575 H. P., 3 compressors, 6 pumps.

Oneida Colliery.
CTY—Schuylkill.
S of H—3 comp. air, 3 steam loco.
PP—23 boilers, total 3,800 H. P., 5 compressors, 7 pumps.

Beaver Meadow Mine.
CTY—Carbon.
S of H—4 steam, 2 comp. air loco.
PP—8 boilers, total 2,000 H. P., 2 compressors, 1 pump.

Eckley Mine.
CTY—Luzerne.
S of H—4 steam loco.
PP—13 boilers, total 1,850 H. P., 15 engines, 1 pump.

LEHIGH & WILKES-BARRE COAL CO.

General Office, Wilkes-Barre, Pa.
PR—C. F. Huber....Wilkes-Barre, Pa.
PA—E. S. Kirkuff.....Wilkes-Barre, Pa.
TR—G. O. Waterman.New York, N.Y.
GS—E. J. Newbaker..Wilkes-Barre, Pa.
EM—D. Bunting, " "
Mech Eng—J. H. Doughty, " "
Sales agent, P. B. Hellner, New York, N. Y.

Hollenback No. 2 Mine, Shaft and Slope.
PO—Wilkes-Barre, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
MF—T. B. Robinson (Outside), Wilkes-Barre, Pa.; D. J. Thomas (Inside) Wilkes-Barre, Pa.
S of H—Mules, rope, 1 comp. air and 1 steam loco. Track gauge 30 in.
S of M—Hand and comp. air machines.
PP—8 return tubular boilers, total 2,000 H. P., 3 air compressors, 1 pump.
EMP—925. Last fiscal year output 530,134 tons.

South Wilkes-Barre No. 5 Mine, Shaft.
PO—Wilkes-Barre, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
ME—M. A. Horan, (Outside), Wilkes-Barre, Pa. F. W. Seymour, (Inside), Wilkes-Barre, Pa.
S of H—Mules, rope, 5 comp. air and 1 steam loco. Track gauge 36 in.
S of M—Hand and comp. air machines.
PP—12 Return tubular boilers, total 2,500 H. P., 6 air compressors, 2 pumps.
EMP—1,404. Last fiscal year output 773,122 tons.

Stanton No. 7 Mine, Shaft and Slopes.
PO—Wilkes-Barre, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
MF—T. C. Carr, (Outside), Wilkes-Barre, Pa. T. R. Gambold, (Inside), Wilkes-Barre, Pa. T. D. Evans, (Inside), Wilkes-Barre, Pa.
S of H—Mules, rope, 4 comp. air and 2 steam locos. Track gauge 36 in.
S of M—Hand and comp. air mach.
PP—18 return tubular boilers, total 3,222 H. P., 3 air compressors, 3 pumps.
EMP—1, 458. Last fiscal year output 798,636 tons.

Sugar Notch No. 9 Mine, Shaft and Drift.
PO—Sugar Notch, Pa.; SP—Same; CTY—Luzerne. RR—C. R. R. of N.J.
MF—T. J. Owens (Outside), Sugar-Notch, Pa. J. R. Morris, (Inside), Sugar-Notch, Pa.
S of H—Mules, rope and 1 steam loco. Track gauge 28 in.
S of M—Hand and comp. air mach.
PP—6 return tubular boilers, total 1,500 H. P., 2 air comp. 3 pumps.
EMP—699. Last fiscal year output 295,981 tons.

Lance No. 11 Mine, Shaft.
PO—Plymouth, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N.J.
MF—A. Ashton, (Outside), Plymouth, Pa. D. B. Lewis, (Inside), Plymouth, Pa.
S of H—Mules, rope and 1 comp. air loco. Track gauge 36 in.
S of M—Hand and comp. air mach.
PP—10 return tubular boilers, total 2,250 H. P., 3 air comp., 5 pumps.
EMP—835. Last fiscal year output 561,848 tons.

Nottingham No. 15 Mine, Shaft and Slope.
PO—Plymouth, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N.J.
MF—J. Becker, (Outside), Plymouth, Pa. T. A. Jones, (Inside), Plymouth, Pa. Chas. Bauer, (Inside), Plymouth, Pa.
S of H—Mules, rope, 5 comp. air and 3 Steam locos. Track gauge 34 to 56½ in.
S of M—Hand and comp. air mach.
PP—14 return tubular boilers, total 3, 300 H. P., 5 air comp., 3 pumps.
EMP—1,141. Last fiscal year output 820,540 tons.

Wanamie No. 18 Mine, Slope and Drift.
PO—Wanamie, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N.J.
MF—T. G. Faulls, (Outside), Wanamie, Pa. John Kelly, (Inside), Wanamie, Pa.
S of H—Mules, rope and 3 steam locos. Track gauge 36 in.
S of M—Hand and mach.
PP—10 return tubular boilers, total 1,666 H. P., 3 pumps.
EMP—889. Last fiscal year output 643,115 tons.

Maxwell No. 20 Mine, Shaft and Slope.
PO—Ashley, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N.J.
MF—D. C. Tiffany, (Outside), Ashley, Pa. Sam'l Griffith. (Inside), Ashley, Pa.
S of H—Mules, rope, 3 comp. air and 1 steam loco. Track gauge 42in.
S of M—Hand and comp. air mach.
PP—14 return tubular boilers, total 2,720 H. P., 3 air comp., 6 pumps.
EMP—960. Last fiscal year output 651,043 tons.

Buttonwood No. 22 Mine, Shaft. Operate washery.
PO—Wilkes-Barre, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
MF—J. W. Price, (Outside), Wilkes-Barre, Pa. W. J. Powell, (Inside), Wilkes-Barre, Pa.
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand and comp. air mach.
PP—10 return tubular boilers, total 1,500 H. P., 2 air comp., 5 pumps.
EMP—733. Last fiscal year output 126,949 tons.

Parrish No. 23 Mine, Slope. Operate washery.
PO—Plymouth, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N.J.
MF—Geo. Gould, (Outside), Plymouth, Pa. D. D. Davis, (Inside), Plymouth, Pa.
S of H—Mules and rope. Track gauge 30 in.
S of M—Hand and comp. air mach.
PP—17 return tubular boilers, total 2,475 H. P., 3 air comp., 2 pumps.
EMP—431. Last fiscal year output 216,928 tons.

Audenried No. 4 Mine, Slope and Stripping.
PO—Audenried, Pa. SP—Same. CTY—Schuylkill. RR—C. R. R. of N.J.
MF—C. T. Lazarus, (Outside), Audenried, Pa. Jas Phillips, (Inside), Audenried, Pa. Neal Gallagher, (Inside), Audenried, Pa.
S of H—Mules, rope, 1 elec. and 3 steam locos. Track gauge 42 in.
S of M—Hand and mach.
PP—29 return tubular boilers, total 3,085 H. P., 2 air comp., 10 pumps.
EMP—967. Last fiscal year output 556,650 tons.

Honey Brook No. 5 Mine, Slope and Stripping.
PO—Audenried, Pa. SP—Same. CTY—Schuylkill. RR—C. R. R. of N.J.
MF—J. S. Davis, (Outside), Audenried, Pa. Dan'l Sube, (Inside), Audenried, Pa.
S of H—Mules, rope and 5 steam locos. Track gauge 42 in.
S of M—Hand and mach.
PP—23 return tubular boilers, total 2,745 H. P., 1 air comp., 3 pumps.
EMP—704. Last fiscal year output 385,493 tons.

WASHERIES.

Empire Washery.
PO—Wilkes-Barre, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N. J.
ME—C. L. Peck....Wilkes-Barre, Pa.
S of H—1 Steam loco.; track guage 35 in.
PP—Steam from Stanton Colliery.
EMP—41. Last fiscal year output 132,725 tons.

Buttonwood Washery.
PO—Wilkes-Barre, Pa. SP—Same CTY—Luzerne. RR—C. R. R. of N. J.
MF—T. H. Owens...Wilkes-Barre, Pa.
S of H—Scraper Line.
PP—Steam from Buttonwood Colliery.
EMP—30. Last fiscal year output 132,094 tons.

Parrish Washery, Dirt Bank.
PO—Plymouth, Pa. SP—Same. CTY—Luzerne. RR—C. R. R. of N.J.
MF—Geo. Gould .....Plymouth, Pa.
S of H—Scraper Line.
PP—Steam from Parrish Colliery.
EMP—73. Last fiscal year output 98,998 tons.

LOCUST MTN. COAL CO.

General Office, Shenandoah, Pa.
Weston Mine; Tunnel and Stripipng Mammoth, Swenft, Skidmore, Buck and Little Buck Seams.
PO—Shenandoah, Pa.; SP—Same; CTY—Schuylkill; RR— L. V. Mahanoy & Shamokin Br.
PR—J. C. Brown....Philadelphia, Pa.
TR—A. C. Dodson....Bethlehem, Pa.
GM—T. M. Dodson..Shenandoah, Pa.
MS—B. H. Stockett, " "
PA—P. J. Mallow, Morea Colliery, Pa.
EM—H. Christ .....Shenandoah, Pa.
S of H—3 Elec. loco.
S of M—Hand.
PP—2 boilers, loco. type, 2 air comp., also purchase power.
EMP 750 Last fiscal year output 169,120 tons.
Sales agency, Weston Dodson & Co., Inc., Bethlehem, Pa.
New operation.

LYTLE COAL CO.

See Susquehanna Coal Co.

McCAULEY COAL CO.

Pickaway Mine; Drift; Red Ash Seam, 30 to 72 in. thick.
PO—Pittston, Pa.; SP—Yatesville, Pa.; CTY—Luzerne; RR—L. V.
PR—W. Hibbs,.....Pittston, Pa.
TR—W. H. McCauley, " "
GM—W. H. McCauley, " "
PA—W. H. McCauley, " "
GS—G. T. Rowan, " "
EM—G. T. Rowan, " "
MM—A. L. McCauley, " "
MS—John Carden, " "
S of H—Mules; track gauge, 29 in.
S of M—Hand.
PP—Boiler, 80 H. P.
Sales Agent, W. H. McCauley, Pittston, Pa.

McTURK, W. R., COAL CO.

General Office, Philadelphia, Pa.
Girard Mine, Slope, Mammoth and Buck Mtn., Seam 25 to 35 ft. thick; Washery.
PO—Girardville, Pa.; SP—Same; CTY—Schuylkill; RR—Reading.
PR—W. R. McTurk, Philadelphia, Pa.
TR—C. H. Wisler, " "
GM—Morton H. McTurk, Girardville, Pa.
PA—M. H. McTurk, " "
GS—E. H. Lamb.....Girardville, Pa.
S of H—3 Steam loco. and mules; track gauge 36 in.
S of M—Hand.
PP—5 Water tube, B. & W. boilers, total 2,500 H.P., 4 engines, 2 air compressors and 4 pumps.
EMP—350.

MARKLE, G. B. CO.

General Office, Jeddo, Pa.
PR—John Markle .....Jeddo, Pa.
TR—W. W. Hindenmach, " "
GM—A. B. Jessup, " "
Asst GM—G. P. Troutman, " "
PA—T. C. Smith, " "
MM—J. R. Morgan, " "
EE—W. Biesel,
DS—Jacob Stidel, " "
DS—Dan Levan, " "
DS—J. Kiemberger, " "
DS—C. McGill, " "
SCO—Jeddo Supply Co. Buyer, Frank Walk, Jeddo. Pa.

Jeddo No. 7 Mine, Slope and Stripping.
PO—Harleigh, Pa. SP—Jeddo, Pa. CTY—Luzerne. RR—L. V., Ebervale Branch.
MS—Jas. Renshaw.....Jeddo, Pa.
SM—Harry Buckalew....Harleigh, Pa.
S of H—1 steam loco. and mules. track gauge 56½ in.
S of M—Hand
PP—2 Heine. water tube boilers, total 1,000 H. P., 1 gen. unit, 1 pump
EMP—252. Last fiscal year output 338,000 tons.

Ebervale Mine, Slope and Strippings.
PO—Ebervale, Pa. SP—Jeddo, Pa. CTY—Luzerne. RR—L. V., Ebervale Branch.
MS—Jas. Renshaw .....Jeddo, Pa.
SM—George Ash .....Ebervale, Pa.
S of H—3 elec. loco. and mules. Track gauge 56½ in.
S of M—Hand
PP—1 B. & W. water tube boiler, 300 H. P., 4 gen. units.
EMP—Included with Jeddo No. 7.

Jeddo No. 4 Mine, Slope and Shaft. Operate washery.
PO—Jeddo, Pa. SP—Same. CTY—Luzerne. RR—L. V., Ebervale Branch.
MS—Jas. Renshaw .....Jeddo, Pa.
S of H—4 elec. loco. and mules. Track gauge 56½ in.
S of M—Hand
PP—9 B. & W. water tube boilers, total 2,500 H. P., 14 engines, 2-400 K. W. rotaries, 16,000 A. C., 3 phase, 25 cycles, 275 volts D. C., 1 comp., 1 pump.
EMP—870. Last fiscal year output 614,000 tons.

Highland Nos. 2, 5 and 6 Mines, Slopes.
PO—Jeddo, Pa. SP—Same. CTY—Luzerne. RR—L. V., Highland Branch.
MS—P. Marley .....Jeddo, Pa.
S of H—3 elec., 5 comp. air, 2 steam loco. and mules. Track gauge gauge 56½ in.
S of M—Hand
PP—17 water tube boilers, total 3,400 H. P., 26 engines, 1 gen. unit, 110 K. W., 525 volts D. C., 5 comp., 9 pumps. Electric power purchased.
EMP—1,074. Last fiscal year output 815,000 tons.

MARYD COAL CO.
General Office, Land Title Building, Philadelphia, Shaft and Drift, Anthracite Seam.
PO—Maryd, Pa. SP—Tuscarrora, Pa. CTY—Schuylkill.
PR—J. S. Wentz....Philadelphia, Pa.
TR—H. B. Price, " "
GM—T. E. Snyder.....Hazleton, Pa.
PA—A. J. Kotch, " "
MS—Arthur Kennedy .....Maryd, Pa.
SM—A. W. Gundry, " "
SCO—Maryd Supply Co. Buyer, W. S. Singley, Hazelton, Pa.
S of H—Mules.
S of M—Hand
PP—7 boilers, total 1,670 H. P.
EMP—500.
Sales agent, H. C. Barr, Philadelphia, Pa.

MEADOW HILL COAL CO.
PO—Scranton, Pa.; SP—Minooka, Pa.; CTY—Lackawanna; RR—D. & H.
PR—W. Houck.....Scranton, Pa...
GS—E. H. Ritter, " "
Willcommence to ship coal in four months, June 15, 1915.

MIDVALLEY COAL CO.
General Office, Land Title Building, Philadelphia, Pa.
Midvalley Nos. 1 and 2, Slope and Drift.
PO—Wilburton, Pa. SP—Same and Centralia, Pa. CTY—Columbia.
PR—D. B. Wentz....Philadelphia, Pa.
TR—H. B. Price, " "
GM—T. E. Snyder.....Hazleton, Pa.
PA—A. J. Kotch, " "
MS—H. D. Hostenbauder..Wilburton, Pa.
SCO—Midvalley Supply Co. Buyer, W. S. Singley, Hazleton.
SM—W. F. Myers.....Wilburton, Pa.
S of H—Gasoline loco. and mules.
S of M—Hand
PP—16 boilers, total 3,000 H. P.
EMP—550.
Sales Mgr., H. C. Barr, Philadelphia, Pa.

MID-VALLEY COAL CO.
General Office, Scranton, Pa.
Mid-Valley Mine; Slope; Diamond Seam, 54 to 84 in. thick.
PO—Olyphant, Pa.; SP—Peckville, Pa.; CTY—Lackawanna; RR—Erie, D. L. & W., P. & R.
PR—Geo. N. Campbell, Scranton, Pa.
PA—Geo. N. Campbell, " "
CE—Frank G. Dagger, " "
TR—Lewis H. Johns, ..Olyphant, Pa.
MS—Lewis H. Johns, " "
S of H—Mules and rope; track gauge 30 in.
S of M—1 Elec. mach.
PP—1 Return tubular boiler, 50 H. P., gen. unit 220 volts A.C.; power purchased.

MILL CREEK COAL CO.
Middle Lehigh Mine, Slope and Stripping, B. C. D., 3 splits and seams.
PO—New Boston, Pa. SP—Same and Middle Lehigh, Pa. CTY—Schuylkill. RR—L. V. and P. R. R.
PR—Warren Delano....New York, N. Y.
GM—T. D. Jones ....New Boston, Pa.
GS—J. E. Jones. " "
PA—Leon M. Brobst, " "
EM—Geo. W. Evans, " "
SM—Samuel Klechner, " "
S of H—Mules, hand and 5 steam loco. Track gauge 42 in.
S of M—Hand and 1 comp. air mach.
PP—Boilers, total 2,300 H. P., 1 comp., 5 pumps.
EMP—250. Last fiscal year output 97,000 tons.
Sales agent, W. Kisbbaugh, Mauch Chunk, Pa.

MINERAL RAILROAD & MNG. CO.
See Susquehanna Coal Co.

MINOOKA COAL CO.
Minooka Mine; Slope; Nos. 1, 2 and 3, Dunmore Seam, 144 to 168 in. hick.
PO—Scranton, Pa.; SP—Virginia; CTY—Lackawanna; RR—L. & W. V.
PR—J. G. Hayes.....Scranton, Pa.
GM—J. G. Hayes, " "
PA—J. G. Hayes, " "
EM—J. G. Hayes, " "
MS—J. G. Hayes, " "
TR—W. H. Howard, " "
S of H—2 Elec. loco.; track gauge, 36 in.
S of M—Hand.
PP—1 gen. unit, 3 phase, 25 cycles. Power purchased.
EMP—75
Sales Agent, W. H. Howard, Scranton, Pa.

MOOSIC COAL CO.
Moosic Mine. CTY—Lackawanna; RR—Erie.
GS—John F. Cotter.....Wyoming, Pa.
State report.

MOOSIC MOUNTAIN COAL CO.
Moosic Mountain Colliery, Slope and Drift, Dunmore Seam, 2 to 4 ft. thick.
PO—Marshwood, Pa. SP—Throop, Pa. CTY—Lackawanna. RR—Del. Lacka. & West., O. & W. Division.
PR—M. S. Kemmerer. Mauch Chunk, P.
TR—Chas. P. Ford....Marshwood, Pa.
GS—Chas. P. Ford, " "
MS—Milton Hoodmacher, " "
EM—Stevenson & Knight. Scranton, Pa.
SCO—C. P. Ford & Co. Buyer, A. G. Hopkins, Marshwood, Pa.
S of H—Mules and steam engines. Track gauge 3 ft.
PP—10 return tubular boilers, total 750 H. P., 6 pumps.
EMP—500. Last fiscal year output 185,838 tons.

MT. HOPE COAL CO.
Mt. Hope Mine.
PO—Port Carbon, Pa. CTY—Schuylkill. RR—P. & R.
GS—I. D. Boehme....Port Carbon, Pa
S of H—3 steam loco.
S of M—Hand
PP—8 return tubular boilers, 850 H.P.

MT. JESSUP COAL CO., Ltd.
Mt. Jessup Mine.
PO—Peckville, Pa. SP—Winton, Pa. CTY—Lackawanna.
TR—Chas. P. Ford....Peckville, Pa.
MS—John T. Cattwright, " "
S of H—2 steam loco.
S of M—Hand
PP—12 boilers, total 2,940 H. P., 4 pumps.
EMP—746. Last fiscal year output 240,274 tons.

MT. LOOKOUT COAL CO.
See Temple Coal Co.

NAY AUG COAL CO.
Nay Aug Colliery, Slope, Dunmore, Seam 6 to 10 ft. thick. Operate washery.
PO—Scranton, Pa.; SP—Dunmore, Pa.; CTY—Lackawanna; RR—Erie.
PR—David Boies, ...Scranton, Pa.
TR—Chas. B. Staats.....Albany, N. Y.
GM—E. H. Leaning.....Scranton, Pa.
PA—S. D. McNulty " "
EM—E. H. Leaning, " "
GS—John A. Hines, " "
MM—John A. Hines, " "
CE—M. S. Knight, " "
EE—Wm. Mulrooney, " "
S of H—Mules, rope; track gauge 22 in.
S of M—Hand.
PP—3 Return tubular boilers, total 250 H.P., 4 gen. unit, 250 volts A.C., 3 phase 60 cycles, also purchase power.
EMP—239. Last fiscal year output 90,709 tons.
Sales Agency, New York & New England Coal Co., Albany, N. Y.

NOBLE-WILLIAMS COAL CO.
Primrose Mine. CTY—Lackawanna; RR—N. Y. O. & W.
GS—C. S. Snyder.....Carbondale, Pa.
State report.

NORTH AMERICAN COAL CO.
General Office, Wilkes-Barre, Pa.
Mt. Jessup Washery.
PO—Peckville, Pa.; SP—Jessup, Pa.; CTY—Lackawanna; RR—D. & H., D. L. & W., Winton Branch.
PR—N. W. Anthony, 17 Battery Pl., NY.
TR—H. W. Saums...Wilkes-Barre, Pa.
GM—H. W. Saums, " " "
S of H—Mules and rope.
EMP—35. Annual output 165,000 tons.
Sales agent, L. H. Brown, 17 Battery Place, N. Y.

NORTHERN ANTHRACITE COAL CO.
General Office, Dunmore, Pa.
Murray Mine; Shaft; Seam 60 to 78 in. thick.
PO—Murray, Pa.; SP—Lopez, Pa.; CTY—Sullivan; RR—L. V.
PR—M. J. Murray.....Dunmore, Pa.
EM—G. P. Allen, " "
GM—J. F. Flannelly.....Lopez, Pa.
GS—J. F. Flannelly, " "
PA—J. F. Flannelly, " "
TR—P. P. Murray.....Murray, Pa.
MS—R. G. May, " "
S of H—3 Gasoline loco. and mules; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 450 H. P., 3 pumps.
EMP—276. Last fiscal year output 187,775 tons
Sales Agent, J. F. Flannelly, Lopez, Pa.

NORTHWEST COAL CO.
See Temple Coal Co.

NO. 6 COAL CO.
Slope, "Dunmore No. 1" Seam, 6 ft. thick.
PO—Dunmore, Pa. SP—Same. CTY—Lackawanna. RR—Erie.
PR—Wm. Y. Moffat.....Dunmore, Pa.
TR—John G. Moffat.....Dunmore, Pa.
GM—W. Y. Moffatt, " "
PA—W. Y. Moffatt, " "
MS—W. Y. Moffatt, " "
S of H—Elec. loco. and mules.
S of M—Hand
PP—Purchase power.
EMP—25. Last fiscal year output 7,596 tons.

OAK HILL COAL CO.
Oak Hill Colliery, Shaft, Slope and Drift; Skidmore, Buck Mtn., White Ash and Black Seams, 96 to 240 in thick.
PO—Duncott, Pa. SP—Same and Minersville, Pa. CTY—Schuylkill.
PR—T. M. Rider.....Mt. Carmel, Pa.
GM—R. H. Buchanan.....Duncott, Pa.
PA—J. D. Martin .....Duncott, Pa.
SM—J. D. Martin, " "
MM—Fred Gilmentin.....Duncott, Pa.
CE—A. B. Cochran & Son, Pottsville, Pa.
SCO—Oak Hill Store, Duncott, Pa. Buyer, J. D. Martin.
S of H—Mules, 2 gasoline and 5 steam locos. Track gauge 36 in.
S of M—Hand
PP—5 Maxine water tube boilers, total 2,500 H. P.
EMP—650. Last fiscal year output 300,000 tons.

O'BOYLE-FOY ANTHRACITE COAL CO.
General Office, Pittston, Pa.
O'Boyle-Foy Mine, Shaft, "B," "C" and "D," Seams 3 to 6 ft. thick.
PO—Murray, Pa.; SP—Bernice, Pa.; CTY—Sullivan; RR—L. V.
PR—M. W. O'Boyle.....Pittston, Pa.
GM—M. W. O'Boyle, " "
TR—John H. Foy, " "
MS—M. J. Clemons.....Murray, Pa.
S of H—Mules and rope. ... ...
S of M—Hand.
PP—3 Wicks and Heine Water Tube Boilers, total 700 H.P., 1 pump.
EMP—225. Last fiscal year output 88,428 tons.

OXFORD COAL CO.
Mine abandoned.

PARDEE, A., & CO.
Cranberry Mine, Shaft; Operate Washery.
PO—Hazleton, Pa.; SP—Same; CTY—Luzerne; RR—Lehigh Valley.
GS—Frank Pardee .....Hazleton, Pa.
PA—A. P. Platt, " "
MS—J. E. Anderson, " "
EM—J. E. Anderson, " "
SCO—Buyer, B. W. Wilde, " "
S of H—Mules, rope and 11 inside and 6 outside steam loco.; track gauge 42 in.
S of M—Hand.
PP—Boilers, total 6,000 H.P., 1 air compressor and 12 pumps.
EMP—1,400. Last fiscal year output 570,000 tons.

PARDEE BROTHERS & CO., Inc.
Lattimer Mine, Shaft, Slope and Stripping, Mammoth, Primrose, Alpha, Gamma, Buck Mtn., Wharton and Holmes Seams; Operate Washery.
PO—Lattimer Mines, Pa.; SP—Hazleton, Pa.; CTY—Luzerne; RR—L. V. R. R.
PR—C. Pardee, Jr., Lattimer Mines, Pa.
TR—Ario Pardee, 1447 Drexel Bldg., Philadelphia, Pa.
GM—C. Pardee, Jr..Lattimer Mines, Pa.
PA—Jno. W. Crooks, " " "
MS—Robt. Fagan, " " "
SM—Wm. Gabrio, " " "
S of H—3 Elec. 10 Steam, and 1 Gasoline loco.; Standard track gauge.
S of M—Hand.
PP—12 Water tube boilers, total 4,000 H.P., 2 air compressors and 2 pumps, also purchase power.
EMP—1,129. Last fiscal year output 659,754.03 tons.
Sales Agent, T. B. Fryer, 447 Drexel Bldg., Philadelphia, Pa.

PARRISH COAL CO.
Out of business.

PENNSYLVANIA COAL CO.
General Office, 50 Church St., New York, N. Y.
PR—W. A. May.....Scranton, Pa.
TR—F. H. Wright, " "
GM—Wm. W. Inglis, " "
PA—Wm. R. Collins....New York, N. Y.
CE—Alexander Bryder.....Scranton, Pa.
EM—C. W. Neuffer.....Dunmore, Pa.
EE—M. E. Walthall.....Scranton, Pa.
DS—David Given.....Plainsville, Pa.
DS—W. P. Jennings.....Scranton, Pa.
DS—J. P. Jennings, " "
Sales Agent, Williams & Peters, No. 1 Broadway, New York, N. Y.

No. 14 Colliery, Slope, drift and shaft, Hillman, Diamond, Checker, Pittston, Marcy, Clark and Red Seams.
PO—Plainsville, Pa. SP—Pittston, Pa. CTY—Luzerne. RR—Erie.
S of H—5 comp. air and 3 steam locos. gravity and mules.
S of M—Hand.
PP—20 boilers, total 3,600 H. P., 4 comp., 5 pumps.
EMP—1,604. Last fiscal year output 699,430 tons.

Ewen Colliery, Shaft, Checker, Pittston, Marcy, Clark and Red Ash Seams.
PO—Pittston, Pa. SP—Same. CTY—Luzerne. RR—Erie.
S of H—2 steam locos. and mules.
S of M—Hand.
PP—20 boilers, total 3,500 H. P. 3 comp., 6 pumps.
EMP—1,380. Last fiscal year output 506,156 tons.

No. 6 Colliery, Shaft, Checker, Pittston, Marcy, Clark and Red Ash Seams.
PO—Inkerman, Pa. SP—Pittston, Pa. CTY—Luzerne. RR—Erie.
S of H—6 comp. air, 2 steam locos. and mules.
S of M—Hand.
PP—19 boilers, total 3,494 H. P., 9 comp., 1 pump.
EMP—1,524. Last fiscal year output 565,957 tons.

No. 9 and Barnum Collieries, Shafts, Checker, Pittston, Marcy, Clark and Red Ash Seams.
PO—Pittston, Pa. SP—Same. CTY—Luzerne. RR—Erie.
MS—H. T. McMillan ....Pittston, Pa.
S of H—20 elec., 8 steam locos., gravity and mules
S of M—Hand.
PP—38 boilers, total 5,362 H. P., 1 comp., 9 pumps.
EMP—1,944. Last fiscal year output 870305 tons.

Central and Old Forge Mines, Drifts and Shafts, Marcy, Clark and Red Ash Seams.
PO—(C) Avoca, Pa. (OF) Old Forge, Pa. SP—Same. CTY—Luzerne and Lackawanna. RR—Erie.
MS—J. W. Reid .....Avoca, Pa.
S of H—46 elec., 6 steam locos, gravity and mules.
S of M—Hand.
PP—48 return tubular boilers, total 5,600 H. P., 14 pumps.
EMP—2,217. Last fiscal year output 1,094,451 tons.

Nos. 1 and 5 Mines, Drifts, Shafts and Slopes, Clark, Marcy and Red Ash Seams.
PO—Dunmore, Pa. SP—Same. CTY—Lackawanna. RR—Erie.
MS—Jesse Palmer .....Dunmore, Pa.
S of H—11 elec., 5 steam locos., gravity and mules.
S of M—Hand.
EMP—1,861. Last fiscal year output 937,102 tons.

PEOPLES COAL CO.
Oxford Mine, Shaft, Clark and Dunmore Seams, 4-10 ft. thick.
PO—Scranton, Pa. SP—Same. CTY—Lackawanna. RR—D. L. & W., Oxford Switch.
PR—F. P. Christian....Scranton, Pa.
TR—F. P. Christian, " "
GM—S. D. Dimmick, " "
GS—S. D. Dimmick, " "
PA—R. L. Kissinger, " "
MS—Shelby Dimmick, " "
EM—J. H. Pearn. " "
MM—Wm. McLaughlin, " "
EE—Wm. McLaughlin, " "
SCO—Oxford Cash Store Co. Buyer, J. C. Kipp.
S of H—2 Elec. loco., 1 storage battery, rope and mules.
S of M—3 Elec. mach. and hand.
PP—5 water tube, boilers, 1,500 H. P., 2 gen. units, voltage D. C., 1 comp. and 3 pumps.
EMP—400. Last fiscal year output 146,453 tons.

PHILADELPHIA & READING COAL AND IRON CO.
PO—Pottsville, Pa.
PR—W. J. Richards....Pottsville, Pa.
MM—W. H. Lesser, " "
EE—J. T. Jennings,...Pottsville, Pa.
Supt S&M—John Wood, " "
EM—John R. Hoffman, " "
DS—Geo. Clemons, " "
DE—E. J. Weimer, " "
DE—Frank Weiser.....Ashland, Pa.
DE—Jos. Garner, " "
PA—Scott & Landis..Philadelphia, Pa.

Anchor Washery, John Veith, Otto, Glendower, Phoenix Park and Pine Knot Collieries.
DS—E. W. Kaercher....Pottsville, Pa.
MS (Inside)—Chas. Gallagher, Minersville, Pa.
MS (Outside—J. W. Morrison, Minersville, Pa.

Continued on Next Page.

S of H—9 steam locos. and mules.
S of M—Hand.
PP—36 boilers, total 6,690 H. P., 12 pumps, 3 air comp.
EMP—1,955. Last fiscal year output 840,613 tons.

Eagle Hill, Silver Creek and Wadesville Mines.
DS—G. B. Hadesty ....Pottsville, Pa.
MS (Inside)—David Jones, " "
MS (Outside)—Wm. Tiley, " "
S of H—9 steam, 3 air and 1 elec. locos. and mules.
S of M—Hand.
PP—58 Tubular boilers, total 6,000 H. P., 8 pumps and 5 air comp.
EMP—2,449. Last fiscal year output 938,963 tons.

Tunnel Ridge, Ellengowen, Knickerbocker, Mahanoy City, North Mahanoy, St. Nicholas, Boston Run Mines.
DS—John H. Pollard.Mahanoy City, Pa.
MS— (Inside)—J. P. McDonald, St. Nichols, Pa.
MS (Outside)—F. B. Dawson, Mahanoy City, Pa.
S of H—13 steam, 10 air and 8 elec. locos. and mules.
S of M—Hand.
PP—120 tubular boilers, total 15,000 H. P., 22 pumps, 9 air comp.
EMP—4,670. Last fiscal year output 1,801,638 tons.

West Shenandoah, Turkey Run, Shenandoah City, Indian Ridge, Plank Ridge Washery, Draeper, Gilberton and Kohinoor Mines.
DS—Adam Boyd .....Ashland, Pa.
MS (Inside)—Morgan Bevan, Frackville, Pa.
MS (Outside)—A. D. Gable, Shenandoah, Pa.
S of H—10 steam, 3 air and 5 elec. locos. and mules.
S of M—Hand.
PP—86 tubular boilers, total 10,750 H. P., 14 pumps, 11 air comp.
EMP—4,379. Last fiscal year output 1,358,137 tons.

Lincoln, Brookside, Good Spring, Middle Creek Washery.
DS—E. W. Kaercher....Pottsville, Pa.
MS (Outside)—Rudolph Fremont, " "
MS (Inside—Jos. H. Lee, " "
S of H—7 steam, 9 elec. locos. and mules.
S of M—Hand and 4 comp. air mach.
PP—66 return tubular boilers, total 8,250 H. P., 8 pumps.
EMP—2,974. Last fiscal year output 1,200,070 tons.

Hammond, Bast and Potts Mines.
DS—Adam Boyd .....Ashland, Pa.
MS—James Wilson, " "
S of H—10 steam and 5 air locos. and mules.
S of M—Hand.
PP—52 tubular boilers, total 6,500 H. P., 8 pumps, 5 air compressors.
EMP—2,313. Last fiscal year output 1,011,618 tons.

PHILIPS BROTHERS COAL CO.
Now Eastern Penna. Coal Co.

PINE HILL COAL CO.
Pine Hill Mine; Shaft, Drift and Slope; Buck Mtn., Middle Split, Skidmore Ridge, 35 to 49 in. thick.
PO—Minersville, Pa. SP—Lytle, Pa. CTY—Schuylkill; RR—P. R. R., Minersville Br.
PR—Edw. B. Sturges, No. 17 Battery Place, New York, N. Y.
GM—C. B Sturges, No. 17 Battery Place, New York, N Y.
TR—F. E. Platt, Scranton, Pa.
GS—George M. Keiser, Minersville, Pa.
PA—S. E. Lott, Minersville, Pa.
EM—W. B. Wells, Minersville, Pa.
MM—Edw. Ford.....Minersville, Pa.
EE—W. G. Taylor, Minersville, Pa.
SCO—Pine Hill Coal Co. Supply store. Buyer, S. E. Lott, Minersville, Pa.
S of H—7 Elec. loco. and mules. rope and gravity. Track gauge 36 in.
S of H—Hand, elec. and 6 comp. air machines.
PP—4 Maxim boilers, 3,000 H. P., 2 gen. units, 250 volts, D. C. 1 compressor and 5 pumps.
EMP—700. Sales agent C. B. Sturges, New York, N. Y.

PITTSTON COAL MINING CO.
General Office, Pittston, Pa.
Hadleigh Mine, Shaft and slopes, Seam 66 to 180 in. thick.
PO—Sugar Notch, Pa. SP—Same. CTY Luzerne. RR—L. V., C. R. R. of N. J. Hadleigh, Br.
PR—John J. Brown.....Scranton, Pa.
TR—M. W. O'Boyle .....Pittston, Pa.
GM—M. W. O'Boyle.....Pittston, Pa.
PA—Jas. F. O'Boyle " "
GS—Wm. Mangan ....Sugar Notch, Pa.
MS—Frank Ward, " "
EE—Frank Hoffner....Sugar Notch, Pa.
CE—C. M. O'Boyle.....Kingston, Pa.
S of H—Mules, rope and 2 elec. loco.; track gauge 36 in.
S of M—Hand.
PP—2 boilers, total 800 H. P., gen. units, 275 volts D. C.
EMP—325. Last fiscal year output 175,000 tons.
Sales agent, Jas. F. O'Boyle, Pittston, Pa.

PLYMOUTH COAL CO., THE
Now Haddock Mng. Co.

PLYMOUTH RED ASH COAL CO.
General Office, Scranton, Pa.
Drift and Slope; Mines; Ross and Red Ash Seams; 84 and 288 in. thick.
PO—Plymouth, Pa.; SP—Same; CTY—Luzerne; RR—D., L. & W.
PR—D. L. Ficker, Scranton, Pa.
TR—S. H. Swingle, "
GM—W. L. Schlager, " "
S of H—2 Elec. loco. and mules.
S of M—Hand.
PP—Power purchased.

PORT CARBON COAL CO.
Lucie R. Mine; Slope; Barclaugh, Barnes and Tunnel Seams, 36 to 168 in. thick.
PO—Port Carbon, Pa. SP—Same. CTY—Schuylkill. RR—P. & R., Frackville Br.
PR—Thos. F. Slattery...Phila., Pa.
TR—D. I. Slattery ....Tuscarora, Pa.
EM—A. B. Cochran & Sons, Pottsville, Pa.
PA—Samuel Moore....Port Carbon, Pa.
MS—Samuel Moore...Port Carbon, Pa.
SCO—Slattery Bros. Buyer, D. I. Slattery, Tuscarora, Pa.
S of H—2 elec. loco. Tack gauge 38 in.
S of M—Hand.
PP—1 Pump, power purchased.
EMP—100. Last fiscal year output 47,686 tons.

PRICE, PANCOAST COAL CO.
General Office, Scranton, Pa.
Pancoast Mine, Shaft, Seams 2½ to 4 ft. thick.
PO—Throop, Pa.; SP—Same; CTY—Lackawanna; RR—O. & W. and D. L. & W.
PR—J. B. Dickson, 17 Battery Pl., New York, N. Y.
TR—Jessey L. Eddy, 14 Battery Pl.NY.
GM—John R. Bryden....Scranton, Pa.
GS—Jos. V. Birtley .....Throop, Pa.
PA—Harry J. Birtley, ...Scranton, Pa.
MS—Wm. Reid .....Throop, Pa.
CE-EM—Frank G. Wolf, Scranton, Pa.
S of H—Rope; track gauge 36 in.
S of M—Hand.
PP—11 Tubular boilers, total 1837 H.P., 2 compressors, 3 pumps.
EMP—1400. Last fiscal year output 634,331 tons.
Sales Agent, Jos. B. Dickson, 17 Battery Pl., New York, N. Y.

RAUB COAL CO.
Louise Mine, Shaft, Slope and Drift, Ross and Red Ash Seam.
PO—Luzerne, Pa. SP—Same. CTY—Luzerne; RR—L. V., D. L. & W.
PR—W. T. Payne .....Kingston, Pa.
PA—J. B. Blackman....Kingston, Pa.
TR—H. B. Schooley..Wilkes-Barre, Pa.
EM—Chas. S. Miles, " "
GM—Gwillym Edwards....Luzerne, Pa.
MS—Gwillym Edwards, " "
S of H—2 Steam loco., mules and rope; track gauge 36 in.
S of M—Hand.
PP—3 water tube and 4 return tubular boilers, total 1,200 H. P.
EMP—500. Last fiscal year output 131,456 tons.

RED ASH COAL CO
Slope and stipping Mine.
PO—Wilkes-Barre, Pa.; CTY—Luzerne; RR—C. R. R. of N. J.
PR—G. Frederick.....Parrish, Pa.
TR—Walter Roberts..Wilkes-Barre, Pa.
GS—T. F. Minford, Wilkes-Barre, Pa.
S of H—5 Steam loco.
PP—3 Return Tubular Boilers, 4 Pumps.
Output for 1914, 218,072.

REESE, T. R. & SON
Dusky Diamond Mine, Slopes.
PO—Audenreid, Pa.; SP—Same; CTY—Luzerne; RR—C. R. R. of N. J. & L. V.
PR—T. R. Reese.....Audenreid, Pa.
GM—T. R. Reese, " "
MS—T. R. Reese, " "
MS—T. R. Reese, " "
PA—E. C. Reese.....Eckley, Pa.
SM—E. C. Reese, " "
S of H—Elec. and steam.
S of M—Hand.
PP—1 Return tubular boiler, total 90 H.P., elec. power purchased.
EMP—9. Last fiscal year output 3,117 tons.

RISSINGER BROTHERS & CO., Inc.
PR—Harry S. Day, Patterson, N. J.
TR—W. W. Rissinger, 208 N. Main St., Wilkes-Barre Pa.
GM—H. E. Rissinger, West Pittston, Pa.
GS—H. E. Rissinger, " " "
PA—H. E. Rissinger, " " "
CE—H. E. Rissinger, " " "
MM—H. E. Rissinger " " "
EM—Smith & Wells, Wilkes-Barre, Pa.

Troy Mine, Drift and Slopes, Clark and Marcy, Seams 6 ft. to 3½ ft. thick.
PO—West Pittston, Pa.; SP—Wyoming, Pa.; CTY—Luzerne; RR—D., L. & W. and L. V. R. R.
MS—Thos. Davis .....Wyoming, Pa.
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—1 Finch Mach. Works Water tube and 2 return tubular boilers, each 150 H.P., 220 volts A.C., 60-cycle, 3 elec. pumps, also buy power.
EMP—125. Last fiscal year output 35,697 tons.

Miners Mills Mine, Slopes, 5 ft. or Rock Vein, to 7 ft. thick.
PO—West Pittston, Pa.; SP—Hudson on D. & H., Plains on W. B. & E., Miners Mills on C. R. R. of N.J.; CTY—Luzerne.
MS—Chas. Crouse....West Pittston, Pa.
S of H—Mules, 1 gasoline loco; track gauge 36 in.
S of M—Hand.
PP—1 Water tube boiler, 200 H. P.; 2 air pumps.
EMP—141. Last fiscal year output 54,777 tons.

SACANDAGA COAL CO.
General Office, Scranton, Pa.
PR—David Boies .....Scranton, Pa.
TR—Chas. B. Staats,....Albany. N. Y.
GM—E. H. Leaning ... Scranton, Pa.
PA—E. H. Leaning " "
EM—E. H. Leaning, " "
GS—John A. Hines, " "
MM—John A. Hines, " "
CE—M. S. Knight, " "
EE—Wm. Mulrooney, " "
Mohawk Colliery, Rock Slope and Tunnel, Nos. 1, 2 and 3 Dunmore Veins, 42 to 24 in. thick.
PO—Carbondale; SP—Same; CTY—Lackawanna; RR—D. & H.
Sales Agents, New York & New England Coal Co., Albany, N. Y.
MS—Frank Conaboy, ..Carbondale, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—4 Gen. units, 250 volts A.C., 60-cycle, 3-phase, 1 air compressor, 2 pumps; buy power.

No. 2 Mine, Clark and New County Seam, 60 to 108 in. thick.
PO—Mayfield, Pa.
MS—Thomas Keating, ..Mayfield, Pa.
S of H—Steam loco.; track gauge, 36 in.
S of M—Hand.
EMP—60.

No. 3 Mine; Clark and New County Seam, 60 to 96 in. thick.
PO—Mayfield, Pa.
MS—John Costello, ...Mayfield, Pa.
S of H—Mules; tack gauge, 36 in
S of M—Hand.
EMP—75.

No. 4 Mine; Dunmoee Seam, 36 to 48 in. thick.
PO—Vandling, Pa.
S of H—Steam loco. and mules; track gauge 36 in.

ST CLAIR COAL CO. (THE)
General Office, Scranton, Pa.
St. Clair Mine, Shaft, Slope, Drift and Stripping, Mammoth, Skidmore and Buck Mountain Seams, 4 to 60 ft. thick.
PO—St. Clair, Pa. SP—Same. CTY—Schuylkill. RR—P. & R.
PR—Wm. H. Taylor ...Scranton, Pa.
GM—Wm. H. Taylor, " "
TR—N. G. Taylor, " "
PA—T. M. Vogle, " "
GS—Wm. T. Smythe..St. Clair, Pa.
EE—L. D. Bauter, " "
EM—H. W. Althouse...Pottsville, Pa.
SCO—The Schuylkill Supply Co. Buyer, H. B. Siewell, St. Clair, Pa.
S of H—5 elec., 9 steam locos., mules and rope. Track gauge 36 in.
S of M—Hand.
PP—2 water tube, 18 return tubular boilers, total 3,000 H. P., 4 pumps.
Sales agent, W. H. Taylor, Scranton, Pa.

SCHUYLKILL & LEHIGH COAL CO.
Broston Mine. CTY—Schuylkill; RR—P. & R.
GS—Jacob Britton.....Pottsville, Pa.
State report.

SCRANTON COAL CO.
General Office, Scranton, Pa.
PR—John B. Kerr, ..New York, N.Y.
TR—R. D. Rickard, " " "
GM—Wm. L. Allen, ...Scranton, Pa.
PA—F. E. Platt, " "
EM—Frank G. Wolfe, " "
ME—F. L. Moore, " "
Sales Agency, Dickson & Eddy, New York, N.Y.

Pine Brook, Capouse and Mt. Pleasant Mines; Shaft.
PO—Scranton, Pa.; SP—Same, CTY—Lackawanna; RR—N.Y. O. & W., D. L. & W.
MS—Daniel Young, ...Scranton, Pa.
S of H—8 Elec. and 1 steam loco; track gauge 36 in.
S of M—Hand.
PP—1 Water tube, 18 tubular boilers, 12 cylindrical, total 3,560 H.P., 44 gen. units, 290 volts D.C., 4 compressors, 12 pumps.
EMP—1,955. Last fiscal year output 955,601 tons.

West Ridge Mine; Slope.
PO—Scranton, Pa.; SP—Providence Station, Pa.; CTY—Lackawanna; RR—N. Y. O. & W.
MS—Daniel Young, ...Scranton, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers, total 490 H.P.; 10 gen. units.
EMP—253. Last fiscal year output 86161 tons.

Richmond No. 3 Mine; Shaft.
PO—Scranton, Pa.; SP—Throop, Pa.; CTY—Lackawanna; RR—N. Y. O. & W.
MS—Daniel Young, ...Scranton, Pa.
S of H—Mules; 1 steam loco.; track gauge 36 in.
S of M—Hand.
PP—4 Water tube, 2 return tubular boilers, total 1,000 H.P., 10 gen. units, 2 pumps.
EMP—238. Last fiscal year output 146,074.

Johnson Mine; Shaft and slope.
PO—Dickson City, Pa.; SP—Same, CTY—Lackawanna; RR—N. Y. O. & W.
MS—J. K. Berkheiser, Olyphant, Pa.
S of H—3 Elec., 3 steam loco. and mules; track gauge 36 in.
S of M—1 Elec. mach. and hand
PP—17 Tubular boilers, total 2,100 H.P., 31 gen. units 550 volts D.C., 1 compressor, 8 pumps.
EMP—862. Last fiscal year output 361,696 tons.

Raymond Mine; Shaft, slope and drifts.
PO—Archbald, Pa.; SP—Winton, Pa.; CTY—Lackawanna; RR—N. Y. O. & W.
MS—James W. Smith, Peckville, Pa.
S of H—2 Elec., 3 steam loco and mules; track gauge 36 in.
S of M—Hand.
PP—11 Return tubular boilers, total 1,185 H.P., 19 gen. units 275 volts D. C., 1 compressor, 9 pumps.
EMP—692. Last fiscal year output 286,219 tons.

Ontario Mine; Shaft, tunnel and drift; Operate Washery.
PO—Peckville, Pa.; SP—Winton, Pa.; CTY—Lackawanna; RR—N. Y. O. & W.
MS—James W. Smith, Peckville, Pa.
S of H—2 Elec., 4 steam loco. and mules; track gauge 36 in.
S of M—Hand.
PP—25 Cylinder, 12 tubular boilers, total 1,600 H.P., 43 gen. units 275 volts D.C., 1 compressor, 7 pumps.
EMP—1,025. Last fiscal year output 456,405 tons.

Riverside Mine; Shaft.
PO—Winton, Pa.; SP—Same; CTY—Lackawanna; RR—N. Y. O. & W.
MS—James W. Smith, Peckville, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—7 Return tubular boilers, total 1,015 H.P., 12 gen. units, 1 compressor, 2 pumps.
EMP—215. Last fiscal year output 110,394.

SHAMOKIN RED ASH COAL CO.
Operate Washery.
PO—Shamokin, Pa.; SP—Mt Carmel, Pa.; CTY—Northumberland; RR—P. R. R.
PR—D. H. McGhee.....Shamokin, Pa.

Continued on Next Page.

SHAMOKIN RED ASH COAL CO.—Con.
TR—Joseph J. Evans, ..Shamokin, Pa.
GM—D. H. McGhee, " "
GS—D. H. McGhee, " "
PA—D. H. McGhee, " "
PP—Boiler 150 H.P.
Sales Agency, John Hersker, Mahanoy City, Pa.

SHIPMAN KOAL CO.
Colbert Mine; Shaft and Drift; Mammoth, Gamma and Buck Mtn. Seams, 36 to 96 in.
PO—Shamokin, Pa.; SP—Same; CTY—Northumberland; RR—P. R. R., Lancaster Br.
PR—Abel I. Culver....Shamokin, Pa.
TR—Abel I. Culver, " "
GM—Thos. H. Price, " "
GS—Thos. H. Price, " "
PA—W. E. Lindsay, " "
EM—H. H. Kudlich, " "
MM—H. Simonson, " "
MS—T. Mimford, " "
S of H—2 Gasoline loco.; track gauge, 44 in.
S of M—Hand.
PP—B. & W. Stirling water tube boilers, total 800 H. P., 2 compressors, 2 pumps.
EMP—432.
Sales Agency, Pattison & Bowns, No. 1 Broadway, New York, N. Y.

SMITH, H. H., & CO.
Hudson Washery.
PO—Shaft, Pa.; SP—Shenandoah, Pa.; CTY—Schuylkill; RR—P. & R.
PR—H. H. Lineaweaver, Philadelphia, Pa.
GM—Godfrey Laudeman...Pottsville, Pa.
PP—4 Return tubular boilers.
EMP—40. Last fiscal year output 80,-121 tons.

SOUTH SIDE COAL CO.
Suuth Side Washery.
PO—Scranton, Pa.; SP—Same; CTY—Lackawanna; RR—D. & H.
GM—F. P. Benjamin..Scranton, Pa.
PA—F. P. Benjamin, " "
PP—2 Boilers, total 160 H. P.

SPENCER COAL CO.
Spencer Mine, 2 Shafts, Clark & Dunmore Seam.
PO—Dunmore, Pa.; SP—Same; CTY—Lackawanna; RR—Erie.
PR—C. W. Robbins.....Dunmore, Pa.
GM—F. M. Spencer, " "
TR—F. M. Spencer, " "
MS—A. J. McHall, " "
PA—E. H. Wills, " "
S of H—Mules, rope and 5 elec. loco; track gauge Standard.
S of M—Hand.
PP—4 Boilers, total 575 H.P.
EMP—250. Last fiscal year output 70,000 tons.

SPRING HILL COAL CO.
Company dissolved.

SPRUKS COAL CO.
Slope Mine; Dunmore No. 2 Seam, 54 in. thick.
PO—Scranton, Pa.; SP—Dunmore, Pa.; CTY—Lackawanna; RR—Erie, Pittston Div.
PR—S. S. Spruks.....Scranton, Pa.
TR—David Spruks, " "
GM—David Spruks, " "
MS—Thomas Boggert, " "
S of H—2 Elec. loco.
S of M—Hand.
EMP—30.
Successors to the East Mountain Coal Co.

STACKHOUSE, E. S., COAL CO.
Salem Colliery, Drift, Baltimore, Ross and Middle Dunmore Seams, 2 to 10 ft. thick. Operate Washery.
PO—Shickshinny, Pa.; SP—Same; CTY—Luzerne; RR—D., L. & W. D. & H., P. R. R.
PR—E. S. Stackhouse, Shickshinny, Pa.
TR—E. S. Stackhouse, " "
GM—E. S. Stackhouse, " "
GS—E. S. Stackhouse, " "
PA—Wm. C. Cortright, " "
MS—P. F. Mitchell, " "
EE—Perl DeMartin, " "
EM—Chas. S. Miles, Wilkes-Barre, Pa.
SCO—Hill Store, Buyer, Frank Jayne, Shickshinny, Pa.
S of H—4 Elec. loco.; track gauge 3 ft.
S of M—Hand.
PP—1 Erie Return Tubular Boiler, 150 H.P., 1 gen. unit, 275 volts D.C., 1 air compressor and 2 pumps; also purchase power.
EMP—180. Last fiscal year output 59,549 tons.

STERRICK CREEK COAL CO.
See Temple Coal Co.

SUMMIT BRANCH MINING CO.
See Susquehanna Coal Co.

SUSQUEHANNA COAL CO.
General Office, Wilkes-Barre, Pa.
PR—Morris Williams..Philadelphia, Pa.
TR—Arthur Haviland..Philadelphia, Pa.
GM—Robt. A. Quin..Wilkes-Barre, Pa.
PA—Address the Co., " "
CE—R. V. Norris, " "
Mech Eng—F. J. McMahon, " "
EE—Harry Reese, " "
Sales agency, Address Philadelphia Office

Short Mtn. and Williamstown Collieries (Lykens Div.) Shaft, Slope and Drift, Lykens, Buck Mtn., Holmes and Primrose Seams, 2 to 10 ft. thick. Operate washeries.
PO—Lykens, Pa. SP—Same and Williamstown, Pa. CTY—Dauphin RR—P. R. R., Northern Central Branch.
MS—Wm. Auman .....Lykens, Pa.
S of H—10 elec., 5 steam locos. and mules. Track gauge 40 and 47 3-4 in.
PP—91 B. & W. water tube, 9 loco. type boilers, total 11,620 H. P., 5 gen. units, 275 and 300 volts D. C., 7 air comp., 26 pumps.
EMP—2469. Last fiscal year output 1,000,988.19 tons.

William Penn Colliery, Shaft, Drift and Stripping.
PO—Shaft, Pa. SP—Shenandoah, Pa. CTY—Schuylkill. RR—P. R. R.
MS—E. A. Van Horn.....Shaft, Pa.
S of H—1 steam loco. and mules. Track gauge 48 in.
S of M—Hand.
PP—6 B.&W. water tube, 10 Vulcan return tubular boilers, total 2,300 H. P., 1 comp., 1 emergency pump.
EMP—594. Last fiscal year output 368,477.17 tons.

Collieries Nos. 5, 6 and 7 Mines (Wyoming Div.), Shafts, Slopes and Drifts, George, Mills, Hillman, Cooper, Forge, Twin, Ross, Lee Seams. Operate washery.
PO—(5-7) Nanticoke, Pa. (6) Glen Lyon, Pa. SP—Same. CTY—Luzerne. RR—P. R. R., Sunbury Div.
MS—F. H. Kohlbraker.Nanticoke, Pa.
S of H—11 Elec., 10 comp. air, 17 steam loco. and mules. Track gauge 36 and 42 in.
S of M—1 elec. machine and hand.
PP—54 water tube, 18 Cylinder boilers, total 14,662 H. P., 2 gen. units, 275 and 300 volts D C., 4 gen. unit 2,300 volts A. C., 3 phase, 60 cycles, 11 comp. and 8 pumps.
EMP—3959. Last fiscal year output 1,916,280.09 tons.

Lytle Colliery Mine, Shaft, Buck Mtn., Skidmore, Mammoth, 3 Splits, Four Foot, Holmes, Primrose, Diamond and Tracy Seams, 3 to 13 ft. thick.
PO—Minersville, Pa. SP—Lytle, Pa. CTY—Schuylkill. RR—P. R. R., Minersville Branch.
MS—David V. Randall Minersville, Pa.
S of H—4 Elec. 1 Steam loco and mules. Track gauge 44 in.
S of M—Hand.
PP—2 B. & W. water tube, 23 Vulcan return tubular boilers, total 3,950 H. P., 1 gen. unit 2,300 volts A. C., 3 phase, 60 cycles, 2 gen. units 575 volts D. C., 3 compressors, 1 pump.
EMP—864. Last fiscal year output 438,683.14 tons.

Luke Fidler Colliery, Slopes, Drifts and Shaft, Nos. 2, 4, 8, 9, 10, 11 and 12 Seams, 3 to 8 ft. thick.
PO—Shamokin, Pa. SP—Same. CTY—Northumberland. RR—P. R. R.
MS—Wm. R. Reinhardt.Shamokin, Pa.
S of H—3 steam loco. and mules. Track gauge 40 in.
S of M—Hand.
PP—10 B. & W. water tube, 6 Vulcan, return tubular boilers, total 2,120 H. P., 2 gen. units, 2,300 volts A. C., 2 comp., 2 pumps.
EMP—609. Last fiscal year output 227,835.18 tons.

Cameron Colliery, Slopes, Drifts and Shaft, Nos. 2, 4, 5, 6, 7, 7½, 8, 9, 9½, 9 3-4, 10, 10½, 11, 12, 13 and 14 Seams, 2 to 12 ft. thick.
PO—Shamokin, Pa.; SP—Same; CTY—Northumberlind; RR—P. R. R.
MS—William R. Reinhardt, Shamokin, Pa.
S of H—3 Elec., 2 steam loco. and mules; track gauge 39 in.
S of M—Hand.
PP—16 B. & W. water tube boilers, total 1,980 H. P., 1 gen. unit, 275-300 volts D. C., 1 comp., 3 pumps.
EMP—1087. Last fiscal year output 440,704.02 tons.

Scott Colliery; Shafts; Nos. 4, 6, 8, 9, 9½ Seams, 3 to 8½ ft. thick.
PO—Shamokin, Pa.; SP—Kulpmont, Pa.; CTY—Northumberland; RR—P. R. R.
MS—William R. Reinhardt, Shamokin, Pa.
S of H—2 Elec. loco. and mules; track gauge 44 in.
S of M—Hand.
PP—16 B & W water tube boilers, total 2000 H. P., 2 gen. units 2300 volts A. C., 1 compressor.
EMP—827. Last fiscal year output 286,834.08 tons.

Richards Colliery; Slopes and drifts; Nos. 4, 5, 6, 8, 9, 9½, 9 3-4, 10, 10½ and 11 Seams, 3 to 8 ft. thick.
PO—Mount Carmel, Pa.; SP—Same; CTY—Northumberland; RR—P.R.R.
MS—William R. Reinhardt, Shamokin, Pa.
S of H—4 Elec ,4 steam loco. and mules; track gauge 48 in.
S of M—Hand.
PP—18 Vulcan, return tubular boilers, total 2700 H. P., 1 gen. unit 275-300 volts D. C., 1 compressor, 1 pump.
EMP—973. Last fiscal year output 344,697.02 tons.

Hickory Ridge Colliery; Slopes; Nos. 4, 8, 9, 9½ ft. Seams; 3 to 8 ft. thick.
PO—Shamokin, Pa.; SP—Same; CTY—Northumberland; RR—P. R. R.
MS—William R. Reinhardt, Shamokin, Pa.
S of H—2 Elec., 6 steam loco. and mules; track gauge 44 in.
S of M—Hand.
PP—6 B. & W. water tube, 16 Vulcan, return tubular boilers, total 3650 H. P., 1 comp., 8 pumps.
EMP—852. Last fiscal year output 318,242.12 tons.

Pennsylvania Colliery; Slopes; Nos. 4, 5, 8, 9, 9½, 9 3-4, 10 10½, 11 Seams, 2 to 7 ft. thick.
PO—Mount Carmel, Pa.; SP—Same; CTY—Northumberland; RR—P.R.R.
MS—William R. Reinhardt, Shamokin, Pa.
S of H—5 Elec., 2 steam loco. and mules.
S of M—Hand.
PP—16 Vulcan return tubular boilers, total 2400 H. P., 1 gen. unit 275, 300 volts D. C., 6 pumps.
EMP—1055. Last fiscal year output 431,214.04 tons.

Hickory Swamp washery.
PO—Shamokin, Pa.; CTY—Northumberland; RR—P. R. R.
MS—Wm. Reinhardt.....Shamokin, Pa.
EMP—31. Last fiscal year output 50,183 tons.

TEMPLE COAL CO.
General Office, Scranton, Pa.
PR—S. B. Thorne.....Scranton, Pa.
VP—F. H. Hemelright, " "
Secy-Treas—A. M. Bingham, " "
PA—A. C. Twitchell, " "
EM—Geo. H. Engel, " "
MM—Alexander Kethel, " "
EE—Alexander Kethel, " "
Asst MM—John Mcllow....Jermyn, Pa.
Sales Agents, Thorne, Neale & Co., Philadelphia, Pa., and Dickson & Eddy, New York, N. Y.

NORTHWEST COLLIERY CO.
Northwest Colliery, Slope.
PO—Simpson, Pa., SP—Carbondale, Pa. CTY—Lackawanna. RR—N. Y., O. & W.
MS—Tudor Aston.....Simpson, Pa.
S of H—Mules, 1 elec. and 2 steam locos. Track gauge 36 in.
S of M—Hand
PP—3 B. & W. water tube boilers, total 750 H. P., 1 gen. unit, 250 volts D. C., 2 air comp., 1 pump.
EMP—357. Last fiscal year output 178,000 long tons.

LACKAWANNA COAL CO., LTD.
Lackawanna Colliery, Shaft.
PO—Blakely, Pa. SP—Olyphant, Pa. CTY—Lackawanna. RR—O. & W.
MS—Joseph Reese.....Blakely, Pa.
S of H—Mules. 2 steam and 8 elec. locos. Track gauge 36 in.
S of M—Hand.
PP—3 B. & W., 4 Maxine water tube boilers, total 2,100 H. P., 250 volts D. C., 2 pumps.
EMP—853. Last fiscal year output 306,000 tons.

STERRICK CREEK COLLIERY CO.
Sterrick Creek Colliery, 2 Shafts and 1 Drift.
PO—Peckville, Pa. SP—Same. CTY—Lackawanna. RR—D. L. & W., Erie and D. & H.
MS—Joseph Reese .....Blakely, Pa.
S of H—Mules, 2 elec. and 3 steam locos. Track gauge 36 in.
S of M—Hand and 2 electric machines.
PP—4 Maxim and 4 Sterling water tube boilers, total 1,850 H. P., 2 gen. units, 2,300 volts A. C., 2 phase, 60 cycles, 2 air comp., 3 pumps.
EMP—992. Last fiscal year output 419,000 long tons.

FORTY-FORT COAL CO.
Forty-Fort Colliery.
PO—Maltby, Pa. SP—Luzerne, Pa. CTY—Luzerne. RR—D. L. & W., L. V.
MS—James J. McCarthy, Luzerne, Pa.
S of H—Mules and tail rope. Track gauge 42 in.
S of M—Hand.
PP—7 Sterling water tube boilers, total 1,800 H. P., 1 gen. unit, 440 A. C., 3 phase, 60 cycles, 2 pumps.
EMP—700. Last fiscal year output 245,000 long tons.

Harry E. Colliery.
PO—Luzerne, Pa. SP—Same. CTY—Same. RR—D. L. & W., L. V.
MS—James J. McCarthy, Luzerne, Pa.
S of H—1 elec. 1 steam loco. and rope. Track gauge 42 in.
S of M—1 elec. mach. and hand.
PP—7 Sterling water tube boilers, total 1,600 H. P., 1 gen. unit D. C., 2 pumps. Purchase power for haulage and pumping.
EMP—700. Last fiscal year output 261,000 long tons.

MT. LOOKOUT COAL CO.
Mt. Lookout Colliery, Shaft.
PO—Wyoming, Pa. SP—Same. CTY—Luzerne. RR—D. L. & W., Lehigh Valley.
MS—Seward Button.....Wyoming, Pa.
S of H—Mules, 1 steam and 9 elec. locos. Track gauge 36 in.
S of M—Hand and 2 elec. mach.
PP—10 Sterling water tube boilers, total 2,300 H. P., 3 gen. units, 250 volts D. C., 3 air comp., 3 pumps
EMP—767. Last fiscal year output 328,000 long tons.

THOMAS COLLIERY CO.
General Office, Philadelphia, Pa.
Kehley's Run Colliery; Slopes and strippings; Mammoth, Buck Mtn., Seven Foot and Skidmore Seams, 3 to 40 ft. thick.
PO—Shenandoah, Pa.; SP—Same; CTY—Schulykil); RR—Reading.
PR—Percy C. Madeira.Philadelphia, Pa.
TR—Louis C. Madeira, " "
GM—Frank A. Hill.....Pottsville, Pa.
GS—Frank A. Hill, " "
PA—Frank A. Hill, " "
EM—Charles J. Graff....Pottsville, Pa.
MM—Elmer Eisenhower, Shenandoah, Pa.
MS—John Price.....Shenandoah, Pa.
S of H—4 Steam loco. and mules; track gauge 44 in.
S of M—2 Comp. air mach. and hand.
PP—7 Vulcan, 2 Erie, 4 Kendall, return tubular boilers, total 195 H. P., 1 comp. and 4 pumps.
EMP—491. Last fiscal year output 30,967 tons. Sales Agency, Madeira, Hill & Co., Philadelphia, Pa.

THORNE-NEAL WASHERY CO.
Out of business.

TRADERS COAL CO.
General Office, Scranton, Pa.
Ridgewood Mine; Shaft, Slope and drift; Red Ash, Ross, and Baltimore Seams, 24 to 72 in. thick.
PO—Laflin, Pa.; SP—Hudson, Pa.; CTY—Luzerne; RR—C. R. R. of N. J., Erie, D. & H., Everhart Br.
PR—Ed. B. Jermyn.....Scranton, Pa.
GM—Ed. B. Jermyn, " "
TR—Chas. Schlager, " "
PA—Chas. Schlager, " "
GS—John Corcoran....Old Forge, Pa.
CE—Frank Smith.....Hudson, Pa.
MM—Frank Smith, " "
EM—Leon Whaite.....Renham, Pa.
MS—John Conway and Edw. Jenkins, Laflin, Pa.
S of H—6 Elec. loco.
S of M—Hand.
PP—3 Pumps.
EMP—410. Last fiscal year output 146,275 tons.
Sales Agent Chas. Schlager, Scranton, Pa.

TREVORTON COLLIERY COMPANY.
General Office, 1004 Citizen Bldg., Cleveland, Ohio.
Katherine Mine, Drift and Slope.
PO—Shamokin, Pa., Box 324; SP—Dunkleberger, Pa.; CTY—Northumberland. RR—P. & R., Herndon Branch.
PR—J. P. Burton.....Cleveland, O.
TR—C. Burton, " "
PA—C. Burton, " "
GS—C. T. Starr.....Shamokin, Pa.
MS—Robert Kramer, " "
S of H—Mules, rope and 1 gasoline loco. Track gauge 44 in.
S of M—Hand and comp. air mach.
PP—3 Sterling Maxim return tubular boilers total 900 H. P., 1 air comp.; 2 pumps.
EMP—300. Last fiscal year output 120,000 tons.

UPPER LEHIGH COAL CO.
General Office, Philadelphia, Pa.
Upper Lehigh Mine, Slope and Stripping, Buck Mtn. Seam, 3-7 ft. thick.
PO—Upper Lehigh, Pa.; SP—Same. CTY—Luzerne. RR—C. R. R. of N. J., Upper Lehigh Branch.
PR—J. S. Wentz.....Philadelphia, Pa.
TR—H. B. Price, " "
GM—T. E. Snyder.....Hazleton, Pa.
PA—A. J. Kotch, " "
MS—C. H. Rohland..Upper Lehigh, Pa.
EM—B. C. Osler.....Maryd, Pa.
EE—John E. Culp...Upper Lehigh, Pa.
SCO—Upper Lehigh Supply Co., Ltd., Buyer, W. S. Singley, Hazleton, Pa.
SM—Jacob Powell, Upper Lehigh, Pa.
S of H—7 Steam loco. and mules; track gauge 4 ft. 3½ in.
S of M—Hand and steam shovel.
PP—5 Water tube boilers, total H.P. 1,750, 3 return tubular boilers, 450 H.P., 2 gen. units, 115 volts, 1 compressor, 2 pumps.
EMP—234. Last fiscal year output 171,529 gross tons.
Sales Agent, H. C. Barr, Phila., Pa.

VAN WICKLE, A. S. (EST)
General Office, Hazleton, Pa.
Coleraine Colliery, Slope, 3 ft. 8 in. to 25 ft. thick.
PO—Leviston, Pa.; SP—Same. CTY—Carbon; RR—L. V., C.R.R. of N.J., P. & R.
GM—Frank Pardee.....Hazleton, Pa.
GS—John Harvey, " "
PA—A. P. Platt, " "
EM—J. E. Anderson, " "
MM—Wm. J. Thomas....Leviston, Pa.
SCO—Coleraine Supply Co., Buyer W. T. Britt, Beaver Meadow, Pa.
S of H—6 Steam loco. and mules; track gauge 42 in.
S of M—Hand.
PP—2 Water tube, 16 return tubular, Vulcan and Climax, boilers, total 2150 H. P.
EMP—630. Last fiscal year output 267,764.19 tons.
Sales Agent, Henry C. Pearson, Phila, Pa.

WACHNA-TAYLOR ANTHRACITE COAL CO.
Wachna-Taylor Mine, Slope. B and C Seam; 3½ ft. thick.
PO—Mildred, Pa.; SP—Bernice, Pa.; CTY—Sullivan; RR— Lehigh Val.
PR—E. J. Taylor.....Bernice, Pa.
GM—E. J. Taylor, " "
MS—E. J. Taylor, " "
PA—E. J. Taylor, " "
CE—E. J. Taylor, " "
EM—E. J. Taylor, " "
TR—T. H. Wachna, " "
MM—Ed. Hohues.....Mildred, Pa.
S of H—Mules and rope, track gauge 3 ft.
S of M—Hand.
PP—2 Keller return tubular boilers total 160 H. P.; 1 pump.
Sales agent, W. J. Schrad, Mildred, Pa.

WENTZ, J. S. & CO.
Hazelbrook Mine, Slopes, Buck Mtn. Seam
PO—Hazlebrook, Pa. SP—Same. CTY—Luzerne; RR—L. V.
TR—H. B. Price....Philadelphia, Pa.
GM—T. E. Snyder.....Hazleton, Pa.
PA—A. J. Kotch, " "
MS—Chas. H. Rohland
SM—S. V. Widzbor, " "
EM—B. C. Osler.....Maryd, Pa.
MM—Geo. Nemschick..Hazlebrook, Pa.
S of H—1 Gasoline loco. and mules.
S of M—5 Comp. air mach and hand.
PP—12 Return tubular boilers, 1 compressor, 5 pumps.
EMP—250.
Sales Mgr. H. C. Barr, Phila., Pa.

WEST END COAL CO.
General Office, Scranton, Pa.
West End and Melville Mines; Shaft, drift and slope.
PO—Mocanaqua, Pa.; SP—Same CTY—Luzerne; RR—P. R. R. & C. R. R. of N. J.
PR—H. H. Brady.....Scranton, Pa.
TR—H. H. Brady, " "
PA—F. C. Fuller.....Scranton, Pa.
MS—H. A. Filmore....Mocanaqua, Pa.
CE—John Walsh.....Shickshinny, Pa.
EM—C. S. Robbins, " "
MM—Harry Johnson, " "
EE—Jacob L. Remaly, " "
SCO—Shickshinny Store Co., Buyer, John Reidy, Shickshinny, Pa.
S of H—Mules, Rope, Gravity, Comp. air, 18 Elec. and 6 Steam locos. track gauge 36 in.
S of M—Hand.
PP—10 B. & W. and Maxine return tubular boilers, total 3300 H. P., 5 gen. units 250 volts, D. C., 4 compressors and 8 pumps.
EMP—1350. Last fiscal year output 625,000 tons.
Sales Agent, Meeker & Co., 143 Liberty St., New York, N. Y.

WEST MOUNTAIN COAL CO.
Rush Brook Mine, Drifts, Dunmore 1-2 and Clark Seam, 3 ft. thick.
PO—Jermyn, Pa; SP—Same; CTY—Lackawanna; RR—N.Y.O & W. and D. & H.
PR—John A. Komara.
GM—John A. Komara.
PA—John A. Komara
MS—Thomas Kennedy.
CE—Guy Rinker.
EE—Guy Rinker.
EM—T. Campbell.
SCO—Buyer, J. A. Komara.
S of H—Rope and mules; track gauge 28 in.
S of M—Hand and 1 elec. mach.
PP—2 Return tubular boilers, total 300 H.P., 3 gen. units, 125 volts and 1 pump.
EMP—75. Last fiscal year output 32,000 tons.
Sales Agent, John A. Komara.

WEST NANTICOKE COAL CO.
General Office, Wilkes-Barre, Pa.
West Nanticoke Mine, Slope, Tunnel and Drift, Red Ash and Ross Seam.
PO—West Nanticoke, Pa.; SP—Same; CTY—Luzerne RR—P. R. R. Sunbury Div.
PR—A. D. W. Smith, Commercial Trust Bldg., Philadelphia, Pa.
GM—A. D. W. Smith, Commercial Trust Bldg., Philadelphia, Pa.
Secy—A. D. W. Smith, Commercial Trust Bldg., Philadelphia, Pa.
MS—E. W. Davis....Dorranceton, Pa.
S of H—1 Steam loco., and mules; track gauge 42 in.
S of M—Hand.
PP—gen. units 220 volts, A. C., 3 phase, 60 cycles; power purchased.
EMP—125. Last fiscal year output 77,131 tons.
Sales agent, Susquehanna Coal Co.

WILKES-BARRE ANTHRACITE COAL CO.
Hillman Mine, Shaft, Hillman and Staton Seams. Operate washery.
PO—Wilkes-Barre, Pa.; SP—Same; CTY Luzerne; RR—L. V.
GM—Thos. H. Price..Wilkes-Barre, Pa.
PA—J. O. Thompson, " "
EM—H. H. Kudlich " "
S of H—Mules, rope and gravity.
S of M—Hand.
PP—4 Boilers, total 1200 H. P., gen. unit 250 volts D. C., 1 comp. and 3 pumps.

WILKES-BARRE COLLIERY CO.
General Office, Philadelphia, Pa.
Madeira Mine; Slopes and Drifts.
PO—Wilkes-Barre, Pa.; SP—Hudson, Pa.; CTY—Luzerne; RR—D. & H., P. R. R., Erie.
PR—Percy C. Madeira.....Phila., Pa.
TR—Louis C. Madeira, " "
GM—W. G. Thomas.....Parsons, Pa.
EM—F.B.Davenport..Wilkes-Barre, Pa.
EE—Jos. Linden.....Plains, Pa.
MF—Wm. Powell...Miner's Mills, Pa.
Resident Director Frank A. Hill, Pottsville, Pa.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—2 Elec. mach. and hand.
PP—440 volts A. C., 3 phase and 25 cycles; Purchase power.
Sales Agency, Madeira Hill & Co., Philadelphia, Pa.

WHITE & CO.
Howard Colliery; Slope; Primrose Seam, 5 to 10 ft. thick.
PO—Pottsville, Pa.; SP Same; CTY—Schuylkill; RR—P. R. R.
GS—Richard White.....Pottsville, Pa.
MS—Robert White, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 575 H. P., 2 pumps.

WOLFE COLLIERY & SUPPLY CO.
General Office, Hudson, Pa
Wolfe Colliery; Slope; Buck Mtn. Seam, 48 to 144 in. thick.
PO—Freeland, Pa.; SP Same; CTY—Luzerne; RR—L. V.
PR—A. F. Wolfe, ...Hudson, Pa.
GM—A. F. Wolfe, " "
GS—Joseph G. Saricks, Freeland, Pa.
MS—John Saricks, " "
SCO—Wolfe Supply Co., " "
S of H—1 Steam loco. and mules.
S of M—Hand.
PP—3 Return tubular boilers.
EMP—200.
Sales Agency, Lehigh Valley Coal Co.

WOLF CREEK COAL CO.
Wolf Creek Mine, Slope, White Ash Seam. Operate Washery.
PO—Minersville, Pa. SP—Reading, Pa. CTY—Schuylkill. RR—Reading.
PR—Geo. M. Keiser....Minersville, Pa.
GM—Geo. M. Keiser, " "
CE—Geo. M. Keiser, " "
TR—C. B. Sturges.....New York, N.Y.
GS—Allen Kellar .....Minersville, Pa.
PA—S. E. Lott, " "
S of H—Steam.
S of M—Hand.
PP—3 Pumps.
Last fiscal year output 50,000 tons.

YOST MINING CO.
General Office, West Pittston, Pa.
Yost Mine, Slope, Marcy Seam, 4 to 5 ft. thick.
PO—West Pittston, Pa.; CTY— Luzerne, RR—D. & H., Erie.
PR—Harry S. Day ....Patterson, N.J.
TR—W. W. Rissinger, Wilkes-Barre, Pa.
GS—H. E. Rissinger, " "
GM—H. E. Rissinger, West Pittston, Pa.
PA—H. E. Rissinger, " "
CE—H. E. Rissinger, " "
EM—Harry Meyers. " "
MS—Wm. Startzell, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—Buy power, 3 elec. pumps.
EMP—100.
Sales Agent, H. Stelle, Scranton, Pa.



PENNSYLVANIA BITUMINOUS

For List of Abbreviations See Page 498.

ACME GAS COAL CO.
General Office, Greensburg, Pa.
Acme Mine—Drift, L. Kittanning Seam, 40 to 62 in. thick.
PO—Rimersburg, Pa.; SP—Same; CTY—Clarion; RR—P. R. R., Sligo Br.
PR—Julian B. Huff.....Greensburg, Pa.
TR—J. R. Eisaman, " "
PA—A. N. Pershing, " "
EM—Robert Morris, " "
GS—L. B. Lewis.....Rimersburg, Pa.
SCO—Rimersburg Supply Co., Rimersburg, Pa.
S of H—5 Elec. lcoo.
S of M—11 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., gen. units 2400 volts A. C., 250 volts D. C., 3 pumps.
EMP—360. Last fiscal year output 271,600 tons.

ADA COKE COMPANY.
General Office, Uniontown, Pa.
Ada Mine, Drift, Pittsburgh Seam, 7 ft. thick.
PO—Cheat Haven, Pa. SP—Same. CTY—Fayette. RR—B. & O.
TR—J. A. Strickler,.. Uniontown, Pa.
GM—McClellan Leonard. " "
PA—McClellan Leonard, " "
MS—G. W. Gibson, Cheat Haven, Pa.
S of H—Gravity. Track gauge 42 in.
S of M—Hand.
PP—2 Hand pumps.
Coke ovens—50 Bee Hive.

ADAMSBURG GAS COAL CO.
Gress Mine, Slope and Drift, Pgh. Seam, 6¾ to 7 ft. thick.
PO—Adamsburg, Pa.; SP—Edna, Pa.; CTY Westmoreland; RR—B. & O.., Edna Branch.
PR—D. L. Dillinger....Greenburg, Pa.
TR—W. A. Huff, " "
EM—R. G. Gill, " "
PA—H. F. Baer.....Adamsburg, Pa.
MS—H. F. Baer, " "
S of H—Rope and steam.
S of M—Hand.
PP—2 Return tubular boilers, 150 H. P., 4 pumps.
EMP—49. Last fiscal year output 54,095.25 tons.
Sales Agent, H. S. Odbert Coal Co.

AJAX CONSOLIDATED COAL CO.
General Office, Title Bldg., Baltimore, Md.
Two Mines in West Virginia, 4 Mines in Penna.
PR—Richard M. Duvall—Baltimore, Md.
VP—John C. Lewis, " "
TR—Edwin W. Adams, " "
GM—Jas. G. Pugh, " "
PA—Jas. G. Pugh, " "
GS—D. J. Riordan.....Fort Hill, Pa.
CE—S. E. Dickey.....Johnstown, Pa.
SCO—Address the Company, Gleason W. Va.
Sales Agent, John C. Lewis, Baltimore, Md.

Ajax No. 4 Mine; Drift; Seam, 42 in. thick.
PO—Fort Hill, Pa.;SP—Same; CTY—Somerset; RR—B. & O., Connellsville Div.
S of H—Mules.
S ofM—Hand.

Red Jacket No. 2 Mine; Drift; "B" Seam, 48 in. thick.
PO—Blue Ball, Pa.; SP—Same; CTY—Lancaster; RR—P. R. R., Tyrone & Clearfield Br.
S of H—Mules.
S of M—Hand.

Ajax No. 5 Mine; Drift; "D" Seam, 42 in. thick.
PO - Fernwood, Pa.; SP Same; CTY—Delaware ; RR—P. & S.
S of H—Mules.
S of M—Hand.

Ajax No 6 Mine; Drift; "D" Seam, 48 in. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY Clearfield; RR P. R. R., T. & C. Br.
S of H—Mules.
S of M—Hand
EMP Total 300. Last fiscal year output, 100,000 tons.

ALADDIN COAL & COKE CO.
General Office, Leechburg, Pa.
Aladdin Mine, Drift, Upper Freeport Seam, 40 to 46 in. thick.
PO—Lucesco, Pa.; SP—Aladdin; CTY—Armstrong.
PR—P. C. Madeira....Philadelphia, Pa.
TR—L. C. Madeira, " "
GM—L. W. Hicks.....Leechburg, Pa.
S of H—Mules; track gauge 37 in.
S of M—Hand.
EMP—123. Last fiscal year output 61,875 tons.

ALLEGHENY COAL CO.
General Office, Cleveland, O.
Harwick Mine, Shaft, Freeeport Seam, 6½ to 8 ft. thick.
PO—Harwick, Pa.; SP—Cheswick, Pa.; CTY—Allegheny; RR—P.R.R., B. & L.E.
PR—W. D. B. Alexander, Cleveland, O.
TR—C. A. Nicola, " "
GS—P. Townsend, " "
PA—C. L. Terry, " "
MS—Geo. S. Greene.....Cheswick, Pa.
CE—John M. Rayburn, Pittsburgh, Pa.
SCO—McCracken Supply Co., " "
S of H—3 Elec. loco.; track gauge 42 in.
S of M—Elec. machines.
PP—8 Erie Return Tubular Boilers, total 1,200 H.P., 2 gen. units, 250 volts, 1 air comp., 1 pump.
Sales Agent, C. L. Terry, Cleveland, O.

ALLEGHENY COAL & COKE CO.
Avenue Mine, Drift.
PO—Leechburg, Pa.; SP—Brackenridge, Pa.; CTY—Armstrong; RR—West Penn.
GM—L. W. Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
MS—Wm. Gilson.....Leechburg, Pa.
EM—E. A. Watters, " "
S of H—2-Elec. locos.
S of M—4-Elec. machines.
EMP—90. Last fiscal year output 109,466 tons.

ALLEGHENY RIVER MINING CO.
General Office, Kittanning, Pa.
PR—Dwight C. Morgan, Kittanning, Pa.
TR—H. S. Hastings....St. Mary's, Pa.
SECY—F. A. Schmidt, Kittanning, Pa.
PA—J. T. Armstrong, " "
EM—Fred Norman, " "
EE—Fred Norman....Kittanning, Pa.
SCO—Shawmut Commercial Co., Buyer, E. J. McLaughlin, St. Mary's Pa.
Supt. of Shops, David Whamond, Furnace Run, Pa.

Conifer Mine, Drift, Brookville Seam, 40 to 60 in. thick.
PO—Conifer, Pa.; SP—Same; CTY—Jefferson; RR—P. S. & N., Conifer Branch.
MS—Arnold Hirst .....Conifer, Pa.
SM—Oscar Swanson, " "
S of H—10 Elec. loco.; track gauge 36 in.
S of M—1 Elec. and 52 comp. air mach.
PP—10 Return tubular, Union Iron Works boilers, total 1,500 H.P., 2 gen. units, 2400 volts A. C. and 250 volts D. C., 4 compressors and 2 pumps.
EMP—500. Last fiscal year output 449,92 tons.

Seminole Mine, Drift, Up. Freeport Seam, 36 to 60 in. thick.
PO—Seminole, Pa., SP—Same; CTY—Armstrong; RR—P. S. & N. Oakland Br.
MS—Arthur White .....Seminole, Pa.
SM—Geo. J. Matthews, " "
S of H—7 Elec. loco.; track gauge 42 in.
S of M—24 Elec. mach.
PP—4 Return tubular, Phoenix boilers, total 600 H.P., 2 gen. units, 250 volts D.C., 2 pumps.
EMP—475. Last fiscal year output 502,193 tons.

Chickasaw Mine, Drift, L. Kittanning Seam, 36 to 60 in. thick.
PO—Chickasaw, Pa.; SP Same; CTY—Armstrong; RR—P., S. & N., Tidal Branch.
MS—Thos. Hall .....Chickasaw, Pa.
SM—F. W. Nangle, " "
S of H—13 Elec. loco.; track gauge 42 in.
S of M—18 Elec. mach.
PP 4 Return tubular, Phoenix boilers, total 600 H.P., 2 gen. units, 250 volts D. C., and 2 pumps.
EMP—310. Last fiscal year output 258,058 tons.

Furnace Run Mine, Drift, L. Kittanning and Up. Freeport, 36 to 60 in. thick.
PO—Furnace Run, Pa.; SP—Same; CTY Armstrong RR P. S. & N. Main Line.
MS—Jas. Ewing....Furnace Run, Pa.
SM—M. A. Black, " "
S of H—10 Elec. loco.; track gauge 42 in.
S of M—15 Elec. mach.
PP—6 Phoenix Return tubular boilers,, total 900 H. P., 2 gen. units, 2400 volts A. C., 3 phase, 60 cycles.
EMP—225. Last fiscal year output 162,802 tons.

Hunts Run Mine, Drift, Brookville Seam, 36 to 48 in. thick.
PO—Conifer, Pa.; SP—Norman, Pa.; CTY—Jefferson RR—P. S. & N., Conifer Br.
MS—Arnold Hirst.....Conifer, Pa.
S of H—1 Elec. loco., track gauge 42 in.
S of M—4 Elec. mach.
PP—3 Return tubular, Economic boilers, total 300 H.P., 1 gen. unit, 250 volts D. C., and 1 pump.
EMP—40. Last fiscal year output 12,552 tons.

ALTHOUSE, W D & CO.
Succeeded by Wentz Smokeless Coal Co.

ALTON COAL CO.
Out of business, mine exhausted.

ALTOONA COAL & COKE CO.
General Office, Altoona, Pa.
Delaney No. 5 and Horse Shoe; Slope and drift; "E" and "B" Seams, 2 to 5 ft. thick.
PO—Coupon, Pa. SP—Kittanning, Pa. CTY—Cambria. RR—P. R. R., Kittanning Run branch.
PR—John Lloyd, Sr., ..Altoona, Pa.
TR—John Lloyd, Sr., " "
PA—W. D. Canan, " "
SM—W. D. Canan, " "
GM—John Lloyd, Jr,....Altoona, Pa.
GS—B. E. Philips, Dunlo, "
MS—John L. Munro, Coupon, "
EM—Jos. Sillyman & Co., Altoona, Pa.
MM—Jas. Holemberg, Elstie, "
EE—E. Eckenrode, Coupon, "
SCO—Horse Shoe Supply Co. Buyer, W. D. Canan, Altoona, Pa.
S of H—2 Elec. loco. and mules. Track gauge 36 in.
S of M—5 Elec., 4 comp. air mach. and hand.
PP—5 Return tubular boilers, total 660 H. P., 250 volts D. C. Also power purchased.
EMP—262. Coke ovens, 70 Bee Hive. Last fiscal year output, 212,701 tons. Sales agent, Wm. Arble, Altoona. Pa.

AMERICAN CONNELLSVILLE COAL & COKE CO.
General Office, Pittsburgh, Pa.
PR—Eugene S. Reilly, Pittsburgh, Pa.
TR—M. B. Kelly, " "
GM—M. B. Kelly, " "
PA—J. P. Kelly, " "
GS—F. W. Byrne,.....Braznell, Pa.
MS—F. W. Byrne, " "
EM—H. Burchinal ....Uniontown, Pa.
Sales Agency, American Steel Co., Pittsburgh, Pa.
American No. 1 Mine.
Drift; Pgh. Seam, 96 to 120 in. thick.
PO—Braznell, Pa.; SP—Linn, Pa.; CTY—Fayette; RR—P. V. & C.
S of H—1 Elec. loco.
S of M—2 Elec. mach.
PP—Power purchased, 1 pump.
Coke ovens 142 Bee Hive.

American No. 2 Mine.
Drift; Pgh. Seam, 96 to 120 in. thick.
PO—REO No. 15, Masontown, Pa.; SP - Martin, Pa.; CTY Fayette; RR —Monon.
S of H—1 Elec. loco.
S of M—1 Elec. mach.
PP 3 Return tubular boilers, 1 gen. unit 250 volts D.C. Coke ovens —240 Bee Hive..
NOTE Can ship 20,000 tons of coal and 20,000 tons of coke monthly.
Formerly the Francis Nos. 1, 2 and Cyrilla Mines of the Sunshine Coal & Coke Co.

AMERICAN MANGANESE MFG. CO.
General Office, Philadelphia, Pa.
Furnace Nos. 1 and 2 Mines; Slope and drift; Up. Freeport Seam, 42 to 72 in. thick.
PO—Dunbar, Pa.; SP—Same; CTY—Fayette; RR—P. R. R., B. & O., P. & L. E., W. Md.
PR—E. E. Marshall, Philadelphia, Pa.
GM—(Asst) Stuart B. Marshall, Dunbar, Pa.
GS—Stuart B. Marshall, " "
PA—R. Palmer, " "
MS—John Greaves, " "
MM—Adam Worthman, " "
CE—S. W. Henshaw, Uniontown, Pa.
S of H—Comp. air loco., mules aand rope.
S of M—14 Comp. air mach. and hand.
PP—2 Rust water tubes, 6 return tubular boilers, total 1,000 H.P., 3 compressors, 8 pumps.
EMP—95. Coke ovens—220 Bee Hive (not in operation).
Last fiscal year output (No. 1) 55,000 tons.
Sales Agency, Shimer & Co., Pittsburgh, Pa. and Philadelphia, Pa.
Formerly the Dunbar Furnace Plant.

AMERICAN SHEET & TIN PLATE CO.
General Office, Frick Building, Pittsburgh, Pa.
Kirkpatrick Mine; Drift; Up. Freeport Seam.
PO—Leechburg, Pa.; SP—Same; CTY—Armstrong; RR—P. R. R.
GM—A. H. Beale....Vandergrift, Pa.
PA—M. S. Dennis....Pittsburgh, Pa.
EM—G. C. Kimball, " "
MS—S. T. Shoff.....Leechburg, Pa.
S of H—Mules.
S of M—Hand.
EMP—40. Last fiscal year output

Scottdale Mine.
PO—Scottdale, Pa.
CTY—Fayette.
EMP—22. Last fiscal year output State report.

ANDA COAL COMPANY
Out of business.

AMERICAN ZINC AND CHEMICAL CO.
General Office, Burgettstown, Pa.
Langeloth Mine; Shaft and Slope, Pittsburgh No. 8 Seam; 54 to 66 in. thick.
PO—Langeloth, Pa.; SP—Burgettstown, Pa.; CTY—Washington; RR—P. C. C. & St. L., Atlasburg Br.
GM—N. L. Heinz..... Langeloth, Pa.
GS—Archibald Jones, " "
PA—Geo. Perritte, " "
MS—Geo. W. Schallcross, " "
SM—H. B. Charles, " "
CE—Geo. S. Baton & Co., Pittsburgh, Pa.
S of H—2 Elec. loco., track gauge 36 in.
S of M—4 Elec. mach.
PP—2 Pumps. Central power plant connected with the zinc plant.
EMP—110.
Sales Agent, N. L. Heinz, Langeloth, Pa.

ANDERSON COAL MINING CO.
General Office, Boston, Mass.
Peerless Nos. 1, 2 and 4 Mines; Drifts E. Up. and Lower Freeport Seam; 32 to 51 in. thick.
PO—Van Ormer, Pa.; SP—Same; CTY—Cambria; RR—Penna., C. & I. Br.
PR—C. G. Worster....Boston, Mass.
TR—J. F. Luber, " "
GM—E K. Dunbar, " "
PA—B. A. McDonnell..Van Ormer, Pa.
GS—B. A. McDonnell, " "
CE—Jos. S. Sillyman.....Altoona, Pa.
MM—J. E. Hartley....Van Ormer, Pa.
S of H—Mules and 2 Elec. loco.; track gauge 36 in.
S of M—Hand and 1 Elec. mach.
PP—2 Stewart return tubular boilers, total 500 H. P., 1-200 K. W. Central station for the three mines.
EMP—230.

ANITA COAL MINING CO.
General Office, Punxsutawney, Pa.
Anita Nos. 6 and 7 Mines; Slopes; Up. Freeport Seam 5½ ft. thick.
PO—Horatio, Pa.; SP—Same, CTY—Jefferson; RR—P. R. R.
PR—Thos. Fisher....Philadelphia, Pa.
TR—W. S. Blaisdell, Punxsutawney, Pa.
PA—Geo. Sheldon, " "
MM—J. A. Davis, " "
GM—W. S. Blaisdell, " "
MS—N. S. White,.....Horatio, Pa.
SCO—Anita Supply Co., Mgr., J. B. Williams, West Punxsutawney, Pa.
S of H—3 elec. loco. Track gauge 40 in.
S of M—8 Comp. air mach.
PP—7 Sterling, 3 Alton and 2 Meadville boilers, 3 compressors and 3 pumps.
EMP—350. Last fiscal year output 250,000 tons.

APOLLO COAL CO.
General Office, Greensburg, Pa.
North West Mine, Drift, Freeport Seam, 4½ ft. thick.
PO—Salina, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
PR—H. C. Burket.....Greensburg, Pa.
PA—H. C. Burket, " "
TR—J. R. Eisaman, " "
MS—H. H. Tussey.....Salina, Pa.
S of H—Mules and 1 elec. Loco.; track gauge 40 in.
S of M—Hand and 2 elec machines.
PP—1 Pump, power purchased.
EMP—110. Last fiscal year output 67,500 tons.
Sales Agent, H. C. Burket.

ARGYLE COAL CO.
General Office, Greensburg, Pa.
Argyle No. 1 and 2 Mines; Drift; Miller or "B" Seam, 32 to 54 in. thick.
PO—South Fork, Pa.; SP—Same; CTY—Cambria; RR—Penna., Main Line.
TR—A. N. Pershing.....Greensburg, Pa.
GM—A. N. Pershing, " "
PA—A. N. Pershing, " "
CE—Robt. Morris, " "
EM—Robt. Morris, " "
GS—M. J. Bracken.. ..Gallitzin, Pa.
MS—J. A. Dunsmore....South Fork, Pa.
SCO—South Fork Supply Co., South Fork, Pa.
S of H—Mules, rope and gravity.
S of M—Hand.
PP—6 Reurn tubular boilers, total 490 H. P., 1 air compressor, 5 pumps.
EMP—260. Last fiscal year output 243,618.9 tons.

ARMERFORD MINING CO.
General Office, Blairsville, Pa.
Armerford Mine; Drift; Miller Seam.
PO—Dilltown, Pa.; SP—Brendlinger Siding, Pa.; CTY—Indiana; RR—P. R. R., C. & C. Div.
PR—D. E. Thompson, Blairsville, Pa.
GM—D. E. Thompson, " "
GS—D. E. Thompson, " "
TR—C. F. Armstrong..Leechburg, "
CE—E. E. Hewitt.....Dilltown, "
MS—J. R. Shaffer, " "
SCO—Armerford Supply Co., " "
S of H—1 Elec. hoist and mules.
S of M—Hand.
EMP—75. Output, 300 tons daily.
Sales Agency, J. Tatnall Lea & Co., Philadelphia, Pa.

ARMSTRONG COUNTY COAL CO.
General Office, 718 Farmers Bank Bldg., Pittsburgh, Pa.
Armstrong Mine, Drift, Upper Freeport Seam, 40 to 60 in. thick.
PO—Leechburg, Pa.; SP—Same; CTY—Armstrong; RR—P. R. R., Conemaugh Div.
PR—P. C. Madeira....Philadelphia, Pa.
TR—L. C. Madeira, " "
GM—L. W. Hicks.....Leechburg, Pa.
EM—E. A. Watters, " "
GS—Thos. Adams, " "
S of H—Mules; track gauge 39 in.
S of M—20 Comp. air machines.
PP—4 Water tube, Eric boilers, total 400 H.P., 2 air compressors and 5 pumps.
EMP—200. Last fiscal year output 101,781 tons.

ARROW COAL MINING CO.
Arrow Colliery; Drift; B or Miller Seam 48 in. thick.
PO—Arrow, Pa.; SP—Same; CTY—Somerset; RR—P. R. R., Southfork Branch.
PR—William Gahagen, ...Arrow, Pa.
GM—William Gahagen, " "
GS—Melvin Gahagen, " "
TR—Clarence Gahagen, " "
PA—C. Gahagen, " "
MS—William Morgan, " "
CE—Harry Gahagen, " "
EE—P. Wirick, " "
SCO—Elizabeth Supply Co., Buyer, Clarence Gahagen, Arrow, Pa.
S of H—1 Electric and 1 steam loco.; track gauge 42 in.
S of M—Chain mach.
PP—1 Sterns return tubular boilers, 100 H.P., gen. unit 250 volts D.C.; power purchased.
EMP—175.
Note—Started to ship coal May 1st.

ASHMAN COAL CO.
General Office, Philadelphia, Pa.
PR—P. C. Maderia, Philadelphia, Pa.
TR—Louis C. Maderia, " "
GM—Frank A. Hill, Pottsville, "
GS—W. R. Wilburn, Philipsburg, "
PA—W. R. Wilburn, " "
CE—L. P. Heller, " "
EM—F. F. Morgan, " "
MM—Wm. Beuner, " "
EE—W. H. Webb, Munson, "
Sales agency, Maderia, Hill & Co. Philadelphia, Pa.

Ghem Mine, Drift, "B" Seam, 36 to 42 in. thick.
PO—Munson, Pa. SP—Same. CTY—Clearfield. RR—N. Y. C. & H. R.
MS—Allen Jaap.....Morrisdale, Pa.
S of H—2 Elec. loco. and mules. Track gauge 34 in.
S of M—Hand.
PP—3 Phoenix and Keeler return tubular boilers, total 300 H. P. 2 gen. units 250 volts D. C. 12 pumps.
EMP—85. Last fiscal year output 73,381 tons.

ATHERTON & BARNES.
Bloomington No. 14 and Troy Mines; Drift; A Seam.
PO—Philipsburg, Pa.; SP—Same ;CTY—Centre; RR—N. Y. C.
GM—John Barnes, Jr., Philipsburg, Pa.
PA—John Barnes, Jr., " "
MS—John Barnes, Jr., " "
S of H—Elec. loco.
S of M—Hand.
EMP—165.

ATLANTIC COAL CO.
General Office,..... Meyersdale, Pa.
PR—F. B. Black, " "
GM—F. B. Black, " "
GS—J. M. Black, Boswell, "
PA—J. M. Black, " "
TR—J. M. Black, " "
EM—J. J. Hoblitzell, Meyersdale, Pa.
Atlantic No. 1 Mine, Slope; C Prime Seam, 4½ to 5½ ft. thick.
PO—Boswell, Pa. SP—Same. CTY—Somerset. RR—B. & O., Quemahoning Branch.
S of H—Rope and mules. Track gauge 42 in.
S of M—Hand.
PP—5 Return tubular boilers, total 500 H. P. 1 compressor.
EMP—125. Last fiscal year output 142,000 tons.
Atlantic No. 2 Mine, Drift, "B" and "A" Seams, 7 to 8 ft. thick.
PO—Meyersdale, Pa. SP—Atlantic No. 2 Siding, Pa. CTY—Somerset. RR—B. & O., Connellsville Div.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—1 Return tubular boiler, 30 H. P. Started mining ... Dec., 1913, output, 10,000 tons.

ATLANTIC COAL MINING CO.
General Office, Philipsburg, Pa.
Atlantic Mine; Drift "E" and "D" Seams; 24 to 84 in. thick.
PO—West Moshannon, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R., and P. & S.
PR—Chas. D. Loraine..Philipsburg, Pa.
PA—Chas. D. Loraine, " "
TR—H. McD. Loraine, " "
S of H—Rope and mules; track gauge, 36 in.
S of M—Hand.
PP—Boiler, 100 H. P.; purchase power

ATLANTIC CRUSHED COKE CO.
General Office, Greensburg, Pa.
PR—Alex. Coulter .....Greensburg, Pa.
TR—J. R. Eisaman, " "
GM—H. C. Burket, " "
PA—H. C. Burket, " "
EM—Robert Morris, " "
SCO—Atlantic Sup. Co., New Derry, Pa.
Atlantic No. 1 Mine, Slope, Pittsburgh seam, 6 ft. thick.
PO—Bradenville, Pa.; SP—Same; CTY—Westmoreland.
S of H—Rope; track gauge 40 in.
S of M—Hand.
PP—3 Return tubular boilers, total 325 H.P.
EMP—50. Annual output 58,000 tons.
Atlantic No. 2 and 3 Mines, Shaft, Pittsburgh Seam, 6 ft. thick.
PO—New Derry, Pa.; SP—Derry, Pa.; CTY—Westmoreland.
S of H—4 Elec. Loco; track gauge 40 in.
S of M—Hand.
PP—2 Water tube, 4 return tubular boilers, total 1,000 H.P., 2 gen. units, 250 volts D.C..
EMP—225. Last fiscal year output 293,000 tons; coke ovens, Bee Hive 120, rectangular 60.

ATLAS COAL CO.
General Office, Pittsburgh, Pa.
Atlas Mine, Shaft, Pittsburgh Seam, 5 to 6 ft. thick.
PO—Atlasburg, Pa.; SP—Same; CTY—Washington; RR—P. C. C. & St. L.
PR—Geo. Z. Hosack....Pitttsburgh, Pa.
PA—Geo. Z. Hosack, " "
TR—John A. Bell, Jr., " "
EM—W. A. McBride....Atlasburg, Pa.
MS—W. A. McBride, " "
EE—Reed Welch, " "
SCO—Atlasburg Mercantile Co., Buyer, W. G. Bovard, Atlasburg, Pa.
S of H—5 Elec. loco.; track gauge 44 in.
S of M—8 Elec. mach.
PP—4 Erie City Boilers, total 1200 H.P., 2 gen. units, 250 volts D.C., 1 pump.
EMP—348. Last fiscal year output 20,600 tons.

ATLAS COKE COMPANY.
General Office, Leetonia, Ohio.
Lafayette Mine, Slope, Pittsburg Seam, 8 to 9 ft. thick.
PO—Helen, Pa. SP—Same. CTY—Fayette. RR—Penna. R. R., Keister Branch.
PR—John McKeefrey, ...Leetonia, O
TR—N. J. McKeefrey, " "
GM—W. D. McKeefrey, " "
MS—Jas. Henderson, Uniontown, Pa.
PA—Geo. Tarr, ... Helen, Pa.
MM—Jas. Steele, " "
SCO—Lafayette Supply Co., buyer, Geo. Tarr, Helen, Pa.
S of H—Mules and rope. Track gauge 42 in.
S of M—Hand.
PP—6 Return Tubular Boilers, Erie, total 550 H. P. 2 generating units, 240 volts, D. C. 2 air compressors, 3 pumps.
EMP—220. Coke ovens, 220 Bee Hive.

AULD RUN COAL CO.
Auld Run Mine.
PO—Ebensburg, Pa.; CTY—Indiana.
State report.

AUXILIARY COAL MINING CO.
General Office, Philipsburg, Pa.
Carbon Mine, Drift, "D" Moshannon Seam, 36-40 in. thick.
PO—Clearfield, Pa.; SP—Curwensville, Pa.; CTY—Clearfield, Pa.; RR—P. R. R., Tyrone Div.
PR—H. M. Fair.....Altoona, Pa.
GM—H. M. Fair, " "
TR—Jacob Swires .....Philipsburg, Pa.
PA—Jacob Swires, " "
GS—H. H. Homer, " "
EM—P. E. Wolmesdorf, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Pumps.
EMP—50. Last fiscal year output 26,738 tons.
Sales Agent, H. M. Fair, Altoona, Pa.

AVELLA COAL CO.
General Office, Greensburg, Pa.
Penobscot Mine, Drift, Pittsburgh Seam, No. 6, 4 ft. 8 in. thick.
PO—Avella, Pa., R.F.D. No. 2; SP—Virginia, W. Va.; CTY—Washington; RR—W. P. T. Ry.
PR—R. H. Jamison.....Greensburg, Pa.
TR—W. R. Turney, " "
GM—W. R. Turney, " "
PA—W. R. Turney, " "
CE—W. R. Turney, " "
MS—Eli Rohr, Avella, Pa., R.F.D. No. 2.
SCO—Avella Supply Co., Buyer, H. M., Davison, R. F. D., No. 2, Avella, Pa.
S of H—Mules and 1 elec. loco.; track gauge 42 in.
S of M—5 Elec. chain machines.
PP—1 Erie City and 1 Phoenix Return Tubular Boilers, total 275 H.P., 250 volts D.C., 2 pumps.
EMP—130. Last fiscal year output 110,000 tons.
Sales Agents, Moreland Coke Co., Pittsburgh, Pa.

AVONMORE COAL & COKE CO.
Avonmore Mine, Drift.
PO—Leechburg, Pa.; SP—Edri, Pa.; CTY—Armstrong; RR—West Penn.
GM—L. W. Hicks,....Leechburg, Pa.
PA—L. W. Hicks, " "
S of H—Rope.
S of M—Hand.
PP—2 Return tubular boilers, total 240 H. P., 1 gen. unit, 3 pumps.
EMP—151. Last fiscal year output 154,124 tons.

BAGDAD COAL & COKE CO.
Bagdad Mine, Drift.
PO—Leechburg, Pa.; SP—Same, CTY—Armstrong; RR— West Penn.
GM—Alfred Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
MS—L. W. Hicks, " "
S of H—Mules.
S of M—Hand.
EMP—55. Last fiscal year output 46,392 tons.

BAKER-WHITELEY COAL CO.
General Office, Keyser Bldg., Baltimore, Md.
Elma Nos. 1 and 2; Drift; "B" Seam 3 ft. 8 in. to 4 ft. thick
PO—Hooversville, Pa.; SP— Same; CTY—Somerset; RR—B. & O., S. M. Div
PR—James S. Whiteley..Baltimore, Md.
TR—E. H. Ray, " "
GM—Chas. H. Brown..Hooversville, Pa.
EE—E. Harshberger, " "
MS—John B. Hughes, " "
SCO—Calvert Supply Co., Buyer, J. D. Yost, Hooversville, Pa.
S of H—5 Elec. loco., track gauge 36 in.
S of M—4 Elec. mach. and hand.
PP—4 Return tubular boilers total 600 H. P., 2 gen. units 550 volts D. C., 2 pumps.
EMP—315. Last year output 201,000 tons.

BALDAUF COAL & COKE CO.
General Office, Punxsutawney, Pa.
Baldauf No. 1 Mine, Slope, Seam 3½ ft. thick.
PO—Strattonville, Pa. SP—Waterson, Pa.; CTY—Clarion. RR—P. & S.
PR—J. H. Fink....Punxsutawney, Pa.
TR—J. H. Fink, " "
GM—J. M. Harvey...Strattonville, Pa.
MS—J. M. Harvey, " "
SCO—Brush Run Supply Co., Strattonville, Pa.
S of H—Mules.
S of M—Hand.

BANNER COAL MINING CO.
General Office, Munsey Bldg., Baltimore, Md.
Banner No. 1 Mine; Drift; "B" Seam 34 to 36 in. thick.
PO—Osceola Mills, Pa.; SP—Same, CTY—Clearfield; RR— P. R. R., Moshannon & Clearfield Br.
PR—C. Francis Brown, Baltimore, Md.
TR—Horace Brown, " "
PA—C. B. Maxwell....Morrisdale, Pa.
EM—C. B. Maxwell Morrisdale, Pa.
MS—R. E. Jones.....Morrisdale, Pa.
S of H—1 Elec. loco.
S of M—Hand.
PP—Power purchased.
NOTE—Purchased the Peerless No. 4 Mine from the Dollie Coal Mining Company.

BANNING-CONNELLSVILLE COKE CO.
Wineland Mine, Drift, Pittsburgh Seam, 9 ft. thick.
PO—Banning, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
PR—Elias Wineland..Philadelphia, Pa.
TR—R. W. Gilmore.....Uniontown, Pa.
GM—R. W. Gilmore, " "
PA—R. W. Gilmore, " "
CE—E. C. Baker, " "
MS—W. H. Watt.....Banning, Pa.
MM—Harry Wiltrout, " "
EE—Harry Wiltrout, " "
SCO—Wineland Supply Co., Buyer, M. McDonald, Banning ,Pa.
S of H—Mules; 1 steam loco.; track gauge 42 in.
S of M—Hand.
PP—Buy power.
EMP—50. Last fiscal year output 60,000 tons; 76 Beehive coke ovens.
Sales Agent, R. W. Gilmore, Uniontown, Pa.

BARNES, JOHN & SONS.
Lancashire No. 2 Mine. CTY—Clearfield.
GS—E. H. Hughes.....Philipsburg, Pa.
State report.

BARNES & TUCKER CO.
General Office, Harrison Bldg., Phila., Pa
Lancashire Nos. 10 and 12; Drift; "D" and "E" Seam, 3 ft. 8 in. to 5 ft. thick.
PO—Barnesboro, Pa.; SP—Same; CTY—Cambria.
PR—John Barnes.....Phila., Pa
GM—John Barnes, " "
TR—H. E. Bird, " "
PA—J. T. Slinger....Barnesboro, Pa.
MM—C. Harris, " "
EE—C. Harris, " "
MS—Richard Todhunter, " "
SCO—Barnes & Tucker Store Co., Buyer, C. T. Griest, " "
CE—C. Schleicher.....Spangler, Pa.
S of H—11 Elec. loco., track gauge 42 in.
S of M—Hand and elec. machines.
PP—5 water tube boilers, total 1,150 H. P., 2 gen. units 250 volts D. C and 5 pumps.
EMP—480. Last fiscal year output 383,646 tons.
Sales Agency, address the Phila. office.

BEACHLY COAL CO.
General Office, Johnstown, Pa.
Beachly Mine, Drift, C Prime Seam, 3 1-2 to 4 1-2 ft. thick.
PO—Beachly, Pa., SP—Same, CTY—Somerset.
RR—B. & O., White Creek Branch.
PR—A. B. Crichton.....Johnstown, Pa.
GS—C. G. Masters.....Beachly, Pa.
EM—F. W. Hanning, " "
CE—Andrew B. Critchton, Johnstown, Pa.
SCO—Masters Supply Co., Beachly, Pa, Buyer, C. G. Masters, " "
S of H—Rope; track gauge 40 inches.
S of M—Hand, and 6 comp. air mach.
PP—Erie boiler, 150 H.P., 2 Engines. 1 air compressor.
EMP—50.
Last fiscal year output 30,800 tons.
Sales Agent, C. G. Masters, Beachly, Pa.

BEAR ROCK COAL CO.
Bear Rock Colliery No. 1; Drift and Slope; "B" Seam; 45 to 50 in. thick.
PO—Lilly, Pa., SP—Bens Creek, Pa.; CTY—Cambria; RR—P. R. R., Main Line.
PR—John Leahey (owner)..Lilly, Pa.
GM—H. M. Leahey, " "
PA—H. M. Leahey, " "
GS—Edw. Leahey, " "
S of H—Mules, 3 Steam, 1 gasoline loco., and rope; track gauge 36 in.
S of M—Hand.
PP—5 Erie Water tube boilers, total 450 H. P., 2 gen. units, 2 pumps.
EMP—85.

BEAR RUN COAL & COKE CO.
Bear Run No. 2 Mine.
GS—W. A. Bowers....Punxsutawney, Pa.
No report.

BEAVER COAL CO.
Beaver No. 1 Mine; Drift; "D" Seam, 38 in. thick.
PO—Spangler, Pa.; SP—Barnesboro, Pa.; CTY—Cambria; RR—P. R. R., Gardner Run Br.
PR—D. B. Beaver.....Spangler, Pa.
GS—D. B. Beaver, " "
TR—L. W. Maurer.....Patton, Pa.
PA—L. W. Maurer, " "
S of H—Rope and mules.
S of M—7 Comp. air mach. and hand.
PP—1 Water tube boiler, total 80 H. P., 1 compressor.
Last fiscal year output, 50,000 tons.
Sales Agent, L. W. Maurer, Patton, Pa.

BEAVER COAL & COKE CO.
Beaver Mine No. 3, Drift, Kittanning Middle Seam, 3 to 3½ ft. thick.
PO—Wampum, Pa.; SP—Same; CTY—Lawrence; RR—P. R. R., E. & H. Div.
PR—G. L. Patterson, New Castle, Pa.
GM—H. K. Hartsuff....Wampum, Pa.
PA—H. K. Hartsuff, " "
MM—R. C. Dawson, " "
EE—R. C. Dawson, " "
CE—G. B. Zahnizer, New Castle, Pa.
EM—G. B. Zahnizer, " " "
S of H—Mules and 1 Elec. loco.; track gauge 37 in.
S of M—Hand, 3 elec. machines.
PP—2 Return tubular Erie City Iron Works Boilers, total 160 H.P., 1 gen. unit, 250 volts D.C.
EMP—6. Last fiscal year output 400 tons.

BEAVER RUN COAL CO.
General Office, 916 Penn Bldg., Philadelphia, Pa.
Beaver Mine, Slope and Drift, E. Lennon Seam, 3¼ to 4 ft. thick.
PO—Beaverdale, Pa. SP—Lloydell, Pa. CTY—Cambria; RR—P. R. R., South Fork Branch.
PR—N. D. Cortright, Mauch Chunk, Pa.
TR—F. B. Cortright, Philadelphia, Pa.
GS—I. A. Boucher.....Beaverdale, Pa.
PA—I. A. Boucher, " "
EM—A. B. Creichton, Johnstown, Pa.
SCO—Beaver Store Co., Buyer, H. L. Heilman, Beaverdale, Pa.
S of H—Rope, mule and 2 elec. loco.; track gauge 3½ ft.
S of M—Hand and 5 elec. mach.
PP—2 Erie Return Tubular Boilers, total 220 H. P., 1 gen. unit, 210 volts A. C., 3 pumps.
EMP—225. Last fiscal year output 170,000 tons.
Sales Agent, Cortright Coal Co., Philadelphia, Pa.

BELLE VERNON COKE CO.
General Office, Oliver Bldg., Pittsburg, Pa.
Belle Vernon Mine; Drift; Pgh. Seam, 78 to 84 in. thick.
PO—Belle Vernon, Pa.; SP—Same; CTY—Fayette; RR—P. & L. E., P. R. R.
PR—J. H. Hillman.....Pittsburg, Pa.
GM—A. T. Affelder, " "
MS—M. C. Nairn....Belle Vernon, Pa.
EE—James Dewalt, " "
SCO—Belle Vernon Merc. Co., "
EM—E. Gebhard.....Masontown, "
S of H—Elec. motor; track gauge, 42 in.
S of H—Hand.
PP—Power purchased.
EMP—[illegible] Last fiscal year output, 75,000 tons.

BELLFIELD COAL & COKE CO.
General Office, Altoona, Pa.
Bend No. 5 Mine, Slope, Miller Seam, 4 ft. 2 in. to 3 ft. 10 in. thick.
PO—Blandburg, Pa.; SP—Elgart, Pa.; CTY—Cambria; RR—P. R. R., Stroud Branch.
PR—J. E. Dasi....Johnstown, Pa.
TR—F. P. McFarland....Altoona, Pa.
GM—F. P. McFarland, " "
MS—F. P. McFarland, " "
PA—F. P. McFarland, " "
EM—Jos. S. Sillyman & Co., " "
SM—C. E. Martz.....Blandburg, Pa.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
EMP—60. Last fiscal year output 32,500 tons.
Sales Agent, F. P. McFarland, Altoona, Pa.

BELLMORE COAL CO.
Bellmore No. 2 Mine, Drift, "D" Seam, 2 ft. 4 in. to 4 ft. 8 in. thick.
PO—Burnside, Pa.; SP—Same; CTY—Clearfield; RR—N. Y. C.
PR—E. E. Kantz.....Burnside, Pa.
GM—E. E. Kantz, " "
TR—S. N. Wigton.....Philipsburg, Pa.
PA—S. N. Wigton, " "
GS—E. E. Kantz.....Burnside, Pa.
S of H—Mules; track gauge 3 ft.

BELLS MILL COAL CO.
Bells Mill; Drift; "B" or L. Kittanning Seam; 3 ft. 8 in. thick.
PO—Blairsville, Pa.; SP—Josephine, Pa. CTY—Indiana. RR—B. R. & P., P.R.R Clearfield & Cresson Div.
PR—J. W. Campbell.....Phila., Pa.
TR—Wilber P. Graff ..Blairsville, Pa.
GM—F. M. Graff, " "
PA—F. M. Graff, " "
MS—Ernest Fletcher....Saltsburg, Pa.
CE—Albert Smith, " "
S of H—Mules and rope, track gauge 42 in.
S of M—12 Comp. air mach. and hand.
PP—2 Erie Return tubular boilers, total 275 H. P., 1 haulage engine; 1 comp. and 3 pumps.
EMP—92. Last fiscal year output 51,771 tons.
Sales Agent, Knickerbocker Fuel Co., New York, N. Y.

BELMONT-QUEMAHONING COAL CO.
Now Hillworth Coal Co.

BEN FRANKLIN COAL CO.
General Office, Freeport, Pa.
2 Mines in Pa; 1 mine in W. Va.
Braeburn and Metcalf Mines, Drift, Up. Freeport Seam, 4½ to 5 ft. thick.
PO—Braeburn, Pa.; SP—Same; CTY—Westmoreland; RR—B. & A. V.
PR—M. J. McKuade,..Moundsville, W.Va.
GM—M. J. McQuade, " "
GS—M. J. McQuade, " "
PA—M. J. McQuade, " "
MS—Thos. McQuade ....Braeburn, Pa.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—5 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C.

BENS CREEK COAL MINING CO.
General Office, Altoona, Pa.
Plane Mine, Drift, "E" or Leamon Seam 4 ft. thick.
PO—Lilly, Pa.; SP—Same; CTY—Cambria; RR—R. R. R.
PR—John A. Leap .....Lilly, Pa.
GM—John A. Leap, " "
PA—John A. Leap, " "
MS—Thos. P. Leap, " "
CE—Jos. S. Sillyman....Altoona, Pa.
S of H—Mules and gravity; track gauge, 36 in.
S of M—Hand.
EMP—54. Last fiscal year output 28,740 tons.

BERGER-AIKEN COAL CO.
Mine exhausted.

BERWIND-WHITE COAL MINING CO.
General Office, Commercial Trust Bldg., Philadelphia, Pa.
PR—Edward J. Berwind, No. 1 Broadway, New York.
TR—H. C. Middleton....Phila., Pa.
CM—Thos Fisher, " "
PA—W. W. Whitney, " "
GS—J. D. Simpson.....Windber, Pa.
Cons. EE—Geo. Wood.....Phila., Pa.
Cons. ME—C. E. Watts..Windber, Pa.
EM—E. A. Delaney, " "
MM—H. Lehmen, " "
ME—M. C. Benedict, " "
SCO—Eureka Stores Co., Buyer, G. K. Smith, Windber, Pa.
Eureka Mines Nos. 28 and 29; Shafts; "B" or Miller Seam; 48 in. thick.
PO—Houtzdale, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R., Tyrone Div.
MS—W. R. Cameron....Houtzdale, Pa.
S of H—Elec., loco; track gauge 36 in.
S of M—Elec. mach.
PP—Gen. units, 500 volts D. C.
Eureka Nos. 30, 31, 34, 35, 35½, 36, 37, 39, 40, 42; Drifts; Miller Seam;
PO—Windber, Pa. SP—Same. CTY—Somerset and Cambria. RR—P.R.R., South Fork Branch.
S of H—78 Elec. loco.
S of M—226 Elec. and 188 comp. air machines.
PP—3 Central Power Plants contain the following equipment: 1 5000 K. W. and 4 1,500 K. W. units, A. C. voltage up to 13200 on long transmission lines. Eight substations where rotary converters, motor generators sets and transformers reduce the voltage to 550 volts D. C. and 440 volts A.C.; 1-400 K.W. Portable substation; 550 volts D.C. 4-400 K.W. D.C. 550 volts generators; driven by C.&G. Cooper Cross Compound Corliss Condensing engines; 3 motor driven compressors direct connected to 300 H.P. 6600 volt A. C. motor driven compressors, driven air compressors, 3-600 H.P. steam driven air compressors, 22 300 H.P. and 4-600 H.P. Stirling water tube boilers.
EMP—4,200.

BESSEMER COAL & COKE CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
Bessemer No. 1 Mine; Shaft; Freeport Seam, 7 ft. thick.
PO—Russellton, Pa.; SP—Same; CTY—Allegheny; RR—B. & L. E.
PR—W. W. Keefer, Wabash Bldg., Pittsburgh., Pa.
TR—E. M. Love, " "
GM—F. S. Love, " "
GS—J. G. Bart ..... Russelton, Pa.
PA—F. C. Boltz.....Pittsburgh, Pa.
CE—J. J. Roby.....Cleveland, O.
EM—Robert McVicker....Russellton, Pa.
MM—J. M. Collier, " "
EE—Chas. Ganss, " "
SCO—Bessemer Supply Co., Russellton, Pa., buyer, Ambrose Eves.
S of H—5 Elec. locos., track gauge 42 in.
S of M—11Elec. mach.
PP—8 Return tubular boilers, total H. P. 1200; 2 gen. units, 550 volts A. C., 3 phase 60 cycles.
EMP—500. Last fiscal year output 584,000 tons.
Sales Agency, F. S. Love, 2212 Oliver Bldg., Pittsburgh, Pa.

BESSEMER COAL MINING CO.
General Office, Reynoldsville, Pa.
Drift Mine; Seam 48 in. thick.
PO—Hilliard, Pa.; SP—Argentine, Pa.; CTY—Butler; RR—B. & L. E.
PR—F. D. Smith, Reynoldsville, Pa.
GM—F. D. Smith, " "
TR—W. B. Alexander, " "
S of H—Elec. loco. and mules.
S of M—Elec. mach. and hand.
PP—3 Erie water tube boilers, 1 compressor, 1 pump.

BESSEMER COKE CO.
General Office, Oliver Bldg., Pgh., Pa.
PR—J. H. Hillman, Jr., Pittsburgh, Pa.
TR—A. B. Sheets, " "
GM—W. L. Affelder, " "
PA—Jos. M. Leithead. " "
EM—F. E. Gebhart.....Masontown, Pa.
SCO—Unity Supply Co., Buyer, M. P. Sullivan, Pittsburgh, Pa.
Sales Agency, J. H. Hillman & Sons Co., Pittsburgh, Pa.
Griffin No. 1 Mine, Drift, Connellsville Seam 90 to 102 in. thick.
PO—Masontown, Pa.; SP—Ifield, Pa.; CTY—Fayette; RR—P. R. R., Monongahela Div.
MS—D. R. DePriest....Masontown, Pa.
S of H—3 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—Power furnished from Griffin No. 2 Mine.
EMP—300. Last fiscal year output 284,571 tons. Coke ovens, 200 rectangular.
Griffin No. 2 Mine, Slope, Connellsville Seam; 90 to 102 in. thick.
PO—Masontown, Pa.; SP—Ifield, Pa., CTY—Fayette; RR—P. R. R., Monongahela Div.
MS—A. N. Young.....Masontown, Pa
SM—C. L. Sangston, " "
S of H—Rope and mules; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 725 H. P. 2 gen. units, 250 volts D. C., 1 comp. and 2 pumps.
EMP—200. Last fiscal year output 214,142 tons. Coke ovens, 196 Bee Hive.
Humphreys Mine, Slope, Connellsville Seam 84 to 108 in. thick.
PO—Greensburg, Pa., R.D. No. 6; SP—Tranger, Pa.; CTY Westmoreland, RR—P.R.R. Sewickley Branch.
MS—A. B. Kelly.....Greensburg, Pa.
SM—W. L. Graham, " "
S of H—Rope; track gauge 44 in.
S of M—Hand
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit., 250 volts D. C., 2 pumps.
EMP—150. Last fiscal year output, 94,906 tons. Coke ovens, 145 Bee Hive.
Duquesne Mine, Slope, Connellsville Seam, 6½-8 ft. thick.
PO—Bradenville, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Main Line.
MS—A. B. Kelley.....Bradenville, Pa.
SM—F. L. Chambers, " "
S of H—Rope; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 100 H.P.
EMP—150. Last fiscal year output 63,242 tons. Coke ovens, 200 Bee Hive; annual output 10,195.

BETZ COAL MINING CO.
Gen. Office, Betz Bldg., Phila., Pa.
Betz No. 2 Mine, Drift, "B" Seam, 4 to 5 ft. thick.
PO—Madera, Pa.; SP—Same; CTY—Clearfield.
PR—John E. Betz, 3rd, Philadelphia, Pa.
TR—Robert Lowrie, " "
S of H—Mules.
S of M—9 comp. air mining mach.
PP—2 Return tubular boilers, total 200 H. P., 1 gen. unit, 1 comp.

BICKFORD FIRE BRICK CO.
Bickford Mine; Drift; "D" Seam; 40 in. thick.
PO—Curwensville, Pa.; SP—Same, CTY—Clearfield.
PR—H. T. Janney....Williamsport, Pa.
TR—J. W. Villinger, " "
GM—J. M. McKinley..Curwensville, Pa.
PA—Rosser Thomas, " "
GS—Frampton Bailey, " "
MS—Clyde Stage, " "
CE—E. W. Hess.....Clearfield, Pa.
S of H—Mules.
S of M—Hand.
EMP—28. Last fiscal year output 26,500 tons.

BIG BEND COAL MINING CO.
General Office, 1410 R. E. Trust Bldg., Philadelphia, Pa.
Nonpareil No. 1 Mine, Drift, Lower Kittanning Seam, 3.08 to 3.10 ft. thick.
PO—Expedit, Pa.; SP—Twin Rocks, Pa. CTY—Cambria; RR—P. R. R., Black Lick Br., Cresson Div.
PR—Theron I. Crane, Philadelphia, Pa.
TR—Wm. S. Pilling, " "
Sec'y—J. A. Jardine, " "
GM—Jos. W. Harrison.....Expedit, Pa.
GS—Jos. W. Harrison, " "
PA—Jos. W. Harrison, " "
SCO—Big Bend Supply Co., " "
S of H—5 Elec. loco.; track gauge 3 ft.
S of M—17 Elec. machines.
PP—5 Return tabular boilers, total 810 H. P., 3 gen. units, 250 volts D. C., 3 pumps.
EMP—250. Last fiscal year output 140,977 tons.
Sales Agents, Pilling & Crane, Phila. Pa.

BIRD COAL CO.
General Office, 718 Harrison Building, Philadelphia, Pa.
Bird No. 1 Mine; Slope; "C" Prime Seam, 60 to 66 in. thick.
PO—Johnsown, Pa.; SP—Same; CTY—Cambria; RR—B. & O.
PR—John Barnes....Philadelphia, Pa.
TR—John Barnes, " "
MS—T. Davis.....Johnstown, Pa.
S of H—Mules and 2 elec. loco.; track gauge, 42 in.
S of H—Hand.
PP—2 Return tubular boilers, total 200 H. P., 1 gen. unit, 250 volts D. C.
EMP—135. Last fiscal year output, 160,000 tons.

BIXLER COAL & COKE CO.
General Office, Pittsburg, Pa.
Shaft Mine; Seam, 84 in. thick.
PO—Adamsburg, Pa.; SP—Same; CTY—Westmoreland; RR—B. & O.
PR—A. N. Birney.....Pittsburg, Pa.
TR—Ira. E. Bixler, " "
GM—Ira. E. Bixler, " "
PA—Ira. E. Bixler, " "
MS—Robert Ainsley....Adamsburg, "
S of H—Elec. hoist.
EMP—50. Last fiscal year output, 40,000 tons. 40 Bee Hive Coke Ovens.

BLACK, A. J.
Nos. 1 and 3 Mines; Drift; Fulton and Barnett Seams; 2 to 5 ft. thick.
PO—Broad Top, Pa.; SP—Dudley, Pa.; CTY—Huntingdon. RR—H. & B. T. M.
GM—A. J. Black....Broad Top, Pa.
TR—A. J. Black, " "
PA—A. J. Black, " "
GS—N. W. Black, " "
SM—N. W. Black " "
MS—George Matheny, " "
CE—P. E. Wormelsdorf, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—289. Last fiscal year output 281,360 tons.

BLACK LICK MINING CO.
PO—Belsano, Pa.
In Bankruptcy.
J. F. Shrader, Trustee, 518 Real Estate Trust Bldg., Philadelphia, Pa.

BLACK OAK COAL CO.
General Office, Tyrone, Pa.
Olympia Mine; Drift; "B" Seam, 48 in. thick.
PO—Osceola, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
PR—H. L. Orr.....Tyrone, Pa.
TR—W. W. Lawer, " "
GM—W. W. Lawer, " "
PA—W. W. Lawer, " "
GS—John Galbraith..Osceola Mills, "
EM—A. R. Zentmire.....Tyrone, "
S of H—Mules.
Output 100 tons per day.

BLAIN RUN COAL CO
Now Cambria Smokeless Coal Co.

BLAINE COAL CO.
General Office, House Bldg., Pittsburgh, Pa.
Blaine Mine; Drift; Pgh. Seam, 6 ft. thick; operate washery.
PO—Lock No. 3, Pa.; SP—Same; CTY—Allegheny; RR—P. & L. E.; Main Line.
PR—P. M. Pfeil, ...Pittsburgh, Pa.
TR—A. H. Stolzenbach, " "
GM—A. R. Budd, " "
GS—A. R. Budd, " "
PA—A. J. Soisson, " "
CE—Geo. S. Baton & Co., " "
S of H—7-Elec. loco., rope and mules; track gauge 44 in.
S of M—14 Elec. mach.
PP—7 Return tubular boilers, total 1050 H. P., 7 gen. units and 4 pumps.
EMP—571. Last fiscal year output 506,269 tons.
Sales Agency, C. M. Budd, Pittsburgh, Pa.

BLAIR BROS. COAL CO.
General Office, Tyrone, Pa.
Orient Mines No. 3 and 4, Drift, "A" and "B" Seam, 3½ to 6 ft. thick.
PO—Powelton, Pa.. SP—Same; CTY—Centre; RR—P. R. R.
PR—C. F. Blair.
TR—S. S. Blair.
PA—S. S. Blair.
MS—S. B. Isenberg, Osceola Mills, Pa.
S of H—Mules and gravity; track gauge 3 ft.
S of M—Hand.
EMP—32. Last fiscal year output 21,320 tons.

BLAIRSVILLE COKE CO.
Now Strangford Coal Co.

BLOSSBURG COAL CO.
General Office, Arnot, Pa.
PR—W. A. May.....Scranton, Pa.
TR—F. H. Wright, " "
GS—John H. Fulford.....DuBois, Pa.
PA—W. R. Collins...New York, N.Y.
EM—A. MacDonald.....DuBois, Pa
EE—Grover Wetzel.....Arnot, Pa.
SCO—H. H. Roberts Trading Co., Arnot, Pa.

No. 1, 2, 5, 7, and Maple Hill, Drift, Blossburg Seam, 2½ to 5 ft. thick.
PO—Arnot, Pa.; SP—Same; CTY—Tioga; RR—Erie, Tioga Div.
MS—R. E. Logan.....Arnot, Pa.
S of H—3 Elec., 8 Steam loco., and mules; track gauge 26 and 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 550 H. P., 1 gen. unit, 250 volts D. C.
EMP—499. Last fiscal year output 241,345 tons.

BLOSSBURG & COAL RUN COAL CO., THE
Now Corning Blossburg Coal Corp.

BLYTH, THOMAS,
Out of business. Alexander Mine worked out.

BOLIVAR COAL & COKE CO
General Office, 421 Wood St., Pittsburgh, Pa.
Lockport No. 1 Mine; Drift; Up. Freeport Seam; 48 to 84 in. thick.
PO—Lockport Station, Pa., SP—Same; CTY—Westmoreland; RR—Penna.
PR—C. H. Tebbetts.....Pittsburgh, Pa.
PA—C. H. Tebbetts, " "
TR—W. S. Love, " "
MS—John McHail, Lockport Station, Pa.
S of H—Mules.
S of M—Hand.
PP—Boilers, total 15 H.P.
EMP—45. Coke Ovens, 52 Bee Hive; Last fiscal year output 27,788 tons.

BOLIVER FACE BRICK CO
See Jos. Soisson Fire Brick Co.

BOWERSVILLE COAL CO.
General Office, Punxsutawney, Pa.
Bowersville Colliery Mine; Slope; Up. Freeport Seam, 4 ft. 2 in. thick.
PO—Bowersville, Pa.; SP—Same, CTY—Jefferson; RR—P. R. R.; Bellwood Div.
PR—S. A. Rinn....Punxsutawney, Pa.
TR—H. G. Bowers, " "
GM—H. G. Bowers, " "
PA—H. G. Bowers, " "
EM—Harry Knarr, " "
GS—W. N. Trusell, " "
S of H—2 Elec. loco.
S of M—2 Elec. and 8 comp. air mach.
PP—3 Return tubular boilers, total 400 H. P., 2 gen. units, 2 comp. and 3 pumps.
EMP—110. Last fiscal year output, 80,895 tons.

BOWMAN BROS. CO.
Fairview Mine, Drift, Pittsburgh Seam, 5½ ft. thick.
PO—McKeesport, Pa.; CTY—Allegheny.
PR—S. M. Bowman.....McKeesport, Pa.
TR—T. H. Bowman, " "
GS—Adam Gephart, " "
PA—J. M. Lyle, " "
EE—Fred Lang, " "
S of H—Mules and incline.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—15. Last fiscal year output 9,500 tons. Coke ovens, 6 Bee Hive.

BOWMAN COAL MINING CO.
Bowman Mine; Drift; Pgh. Seam, 66 in. thick.
PO—Saltsburg, Pa.; SP—Same; CTY—Indiana. RR—P. R. R., Conemaugh Div.
PA—S. J. Robinson.....Saltsburg, Pa.
MS—S. J. Robinson, " "
EM—Albert Smith, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
EMP—75.

BOYD, GEORGE E., COAL CO.
Elizabeth Mine; Drift; Freeport Seam, 46 to 52 in. thick.
PO—Tarentum, Pa.; SP—Edgecliff, Pa.; CTY—Allegheny; RR—P. R. R., Conemaugh Div.
PR—Geo. E. Boyd.....Tarentum, Pa.
TR—Geo. E. Boyd, " "
GM—George E. Boyd, " "
PA—George E. Boyd, " "
MS—J. E. Nelson.....Arnold, Pa.
S of H—1 Elec. loco.; track gauge 42 in.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—8. Capacity, 250 tons per day.

BOYNTON COAL CO.
Chapman Nos. 3, 4 and Black Diamond Mines; Drift; Pgh. Seam, 86 in. thick.
PO—Elk Lick, Pa.; SP—West Salisbury, Pa.; CTY—Somerset; RR—B. & O., Salisbury Br.
PR—F. A. Maust.....Elk Lick, Pa.
GM—F. A. Maust and H. H. Maust, Elk Lick, Pa.
PA—F. A. Maust and H. H. Maust, Elek Lick, Pa.
TR—H. H. Maust, " "
GS—Fred Wagner, " "
MS—Fred Wagner, " "
SM—H. H. Maust, " "
S of H—Mules.
S of M—Hand.
Last fiscal year output, 40,000 tons.

BRADENVILLE COAL & COKE CO.
General Office, Blairsville, Pa.
Bradenville Mine; Slope and drift; Pgh. Seam, 72 to 108 in. thick.
PO—Bradenville, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Main Line.
PR—F. M. Graff, ...Blairsville, Pa.
GM—F. M. Graff, " "
PA—F. M. Graff, " "
TR—W. P. Graff. " "
GS—Ernest Fletcher, ...Saltsburg, Pa.
MS—Ernest Fletcher, " "
CE—Albert Smith, " "
MM—Chauncey Shipley, " "
EE—H. A. Scott, " "
SCO—Kiskimentas Supply Co.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 325 H.P.
EMP—135. Coke ovens—244 Bee Hive.
Sales Agency, Knickerbocker Fuel Co.

BRADLEY & REED.
No. 3 Mine, Slope, "B" Seam.
PO—Gallitzin, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
PA—F. X. Bradley, ..Gallitzin, Pa.
SM—F. X. Bradley, " "
MS—Thomas Morans, " "
S of H—Rope.
S of M—Hand.
PP—Boiler, 30 H. P.

BRANDENBURG COAL CO.
Leased by Ivy Ridge Coal Mng. Co.

BRIER HILL COKE CO.
Brier Hill Mine, Shaft, Pittsburgh Seam.
PO—Brier Hill, Pa. SP—Same. CTY—Fayette. RR—Monongahela.
GM—Thos. McCaffrey, Brier Hill, Pa.
PA—Thos. McCaffrey, " "
MS—Thos. McCaffrey, " "
SCO—Brier Hill Spuply Co., buyer, T. F. Regan, Brier Hill, Pa.
S of H—Comp. air loco.
S of M—Hand.
PP—5 boilers, total 1,500 H. P., gen. units, 250 volts D. C.
EMP—675. Coke ovens, 470.

BROAD TOP COAL & MINERAL CO.
General Office, Huntingdon, Pa.
Jacobs Mine, Drift.
PO—Jacobs, Pa.; SP—Same; CTY—Huntingdon. RR—East Broad Top. and J. & S.
PR—H. C. Ross.....Harrisburg, Pa.
TR—W. M. Oglesby, " "
GM—Robt. F. Powers..Huntingdon, Pa.
PA—Robt. F. Powers, " "
EM—J. Murray Africa..Huntingdon, Pa.
MS—H. G. Cockill.....Jacobs, Pa.
SM—J. O. McCain....Huntingdon, Pa.
S of H—Rope and mules and 1 gasoline loco.; track gauge 30 in.
S of M—Hand and 2comp. air mach.
PP—1 Return tubular boiler, total 110 H. P., 1 air comp., 2 pumps.
EMP—120. Last fiscal year output, 80,000 tons.

BROTHERS VALLEY COAL CO.
Gen. Office, 90 West St., New York, N.Y.
PR—Henry B. Reed, " " "
TR—D. V. Reynolds, " " "
PA—B. A. Polhemus, " " "
GS—C. F. Roy.....Macdonaldton, Pa.
EM—G. B. Fluck, " "
MM—A. L. Lowry, " "
EE—C. E. Hail, " "
SCO—Pen-Mar Supply Co., " "
Buyer, A. C. Polhemus.
Sales Mgr., John M. Leonard.
New York City, N.Y.

Pen-Mar No. 2, Shaft, Miller Vein or "B" Lower Kittanning Seam 48 to 60 in. thick.
PO—Macdonaldton, Pa.; SP—Same; CTY—Somerset; RR—B. & O., Berlin Branch.
MS—M. S. Purcell..Macdonaldton, Pa.
S of H—Rope and 1 Elec. loco.; track gauge 42 in.
S of M—30 comp. air and elec. mach.
PP—4 Boilers, 800 H. P., 1 motor gen. set, 4 comp. and 3 pumps. Power purchased.
EMP—251. Last fiscal year output 225,887 tons.

Pen-Mar No. 3 Mine; Slope; B. & L. Kittanning Seams; 54 to 60 in. thick.
PO—Macdonaldton; SP—Same; CTY—Somerset; RR—B. & O., Berlin Br.
MS—Patrick Purcell Macdonaldton, Pa.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—36 Elec. Short Wall Cutting mach.
PP—3 Boilers, 900 H. P., Motor gen. set, A. C. Power purchased.
EMP—315. Last fiscal year output 324,594 tons.

BROWN BROS. COAL CO.
Brown No. 1 Mine, Drift, "C" Seam, 2 ft. 5 in. thick.
PO—Blandburg, Pa.; SP—Figart, Pa., CTY—Cambria; RR—P.R.R.
GM—W. W. Brown....Blandburg, Pa.
MS—C. A. Brown.....Blandburg, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—9. Last fiscal year output 4,003 tons.

BROWN & COCHRAN.
Nellie Mine, Drift, Seam 9 ft. thick.
PO—Dawson, Pa.; SP—Dickerson Run, CTY—Fayette; RR—P. & L. E.
GM—J. S. Laughrey.....Dawson, Pa.
PA—J. S. Laughrey, " "
MS—J. S. Laughrey, " "
CE—T. M. Zimmerman, " "
EM—T. M. Zimmerman, " "
MM—Oliver Knight, " "
EE—Oliver Knight, " "
SCO—Jos. Cochran Store Co., Buyer, Ed. Miller.
S of H—Mules; track gauge 54 in.
S of M—Haul.
PP—3 Erie Return Tubular Boilers, 1 gen. unit, 250 volts D.C.
Last fiscal year output 100,000 tons. Coke ovens, 330 Bee Hive.

BROWN & CO., W. E.
General Office, Ligonier, Pa.
Drift Mine; Upper Freeport Seam; 48 to 72 in. thick.
PO—Ligonier, Pa.; SP—Darlington; CTY—Westmoreland, RR—Ligonier Valley.
PR—I. F. Heaton.....Clarion, Pa.
GM—W. E. Brown.....Ligonier, Pa.
GS—W. E. Brown, " "
PA—W. E. Brown, " "
EM—J. B. Kelly.....Ligonier, Pa.
S of H—Mules and gravity, track gauge 3 ft.
S of M—Hand.
PP—1 Boiler, 15 H.P., 1 pump.
EMP—17. Last fiscal year output 11,525 tons.

BROWN, W. HARRY,
Alicia Mine, Seam 8½ ft. thick.
PO—Alicia, Pa.; SP—Same; CTY—Fayette; RR—P.R.R., Mon. Div.
PR—W. Harry Brown, owner.
GM—W. C. Reynolds.....Alicia, Pa.
CE—C. E. Taylor
SCO—Brown Supply Co., " "
S of H—3 Elec. and 1 steam loco.
S of M—7 Elec. mach.
PP—3 Boilers, total 1,125 H.P., 1 compressor and 1 pump.
EMP—550. Last fiscal year output 189,676 tons. Coke ovens, 400 Rectangular.
Sales Agent, C. F. Colbert, Jr.

BROWNFIELD-CONNELLSVILLE COKE CO.
General Office, Uniontown, Pa.
PR—I. H. Brownfield..Uniontown, Pa.
TR—I. H. Brownfield, " "
GM—W. J. White, " "
PA—W. J. White, " "
GS—Wm. Beal, " "
EE—Sam Brownfield, " "
Sales Agency, Brownfield Coal & Coke Co., Uniontown, Pa.

Myers Mine; Drift; Pgh. Seam 8½ ft. to 11 ft. thick.
PO—Tarr, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R.
MS—R. L. Goff.....Tarr, Pa.
S of H—Mules and elec.; track gauge 44 in.
S of M—Hand.
PP—Purchase power, 1 pump.
EMP—19. Coke ovens 32; Bee Hive. Last fiscal year output 45000 tons.

Marie and Martha Mines; Drift and Slope; Sewickley Seam 5½ to 6½ ft. thick.
PO—Uniontown, Pa.; SP—Same; CTY—Fayette; RR—P.R.R.
MS—Wm. Beal.....Uniontown, Pa.
S of H—Mules and rope; track gauge 44 in.
S of M—Hand.
PP—Power purchased, 1 pump.
EMP—80. Last fiscal year output 105,000 tons.

BROWNING COKE CO.
General Office, Uniontown, Pa.
Browning Mine, Drift, Seam 7 to 10 ft. thick.
PO—Dunbar, R.D. 32; SP—Vance Mill Junction; CTY—Fayette; RR—P.R.R., Mono. Div., Bitner Br.
GM—A. Q. Davis.....Uniontown, Pa.
PR—A. Q. Davis, " "
MS—A. Q. Davis, " "
TR—F. B. Hess, " "
S of H—Mules; track gauge 44 in.
S of M—Hand.
EMP—18. Output for 7 months, 11,900 tons.
Coke ovens 20 Bee Hive.
Sales Agents, Harris-Smith Coke & Coal Co., Uniontown, Pa.

BROWNSVILLE COKE CO.
General Office, Uniontown, Pa.
Magee Mine, Slope and Drift, Pgh. Seam, 9 ft. thick.
PO—R.F.D. No. 3, Latrobe, Pa.; SP—Brownsville; CTY—Westmoreland; RR—Monongahela.
PR—I. W. Semans.....Uniontown, Pa.
TR—I. W. Semans, " "
GM—J. W. Abraham, " "
GS—J. W. Abraham, " "
PA—J. W. Abraham, " "
CE—F. G. Christopher, " "
MS—Samuel Stone ....Brownsville Pa.
S of H—Elec.; track gauge 42 in.
S of M—Hand.
PP—Buy power.
EMP—48. Last fiscal year output 21,568 tons. Coke ovens, 50 Bee Hive.
Sales Agents, Producers Coke Co., Uniontown, Pa.

BRUIN COAL CO.
Bruin Mine, Drift, Seam 5 to 6 ft. thick.
PO—Bruin, Pa.; SP—Same; CTY—Butler; RR—B. & O., P. & W. Div.
PR—Don. Rose.
TR—Roy Rose.

Continued on Next Page.

BRUIN COAL CO.—Continued.
GM—J. H. Thompson...Pittsburgh, Pa.
GS—J. H. Thompson, " "
PA—J. H. Thompson, " "
MS—Glen Christy,.....Bruin, Pa.
S of H—Mules; track gauge 42 in.
S of M—Elec.
PP—Gas Engine, 85 H. P., 250 volts D.C., 2 phases and cycles.

BRUSH CREEK COAL CO.
General Office, Punxsutawney, Pa.
PO—Indiana, Pa. SP—Waterman and Luciusboro, Pa.; CTY—Indiana.
PR—L. W. Robinson, Punxsutawney Pa.
TR—F. H. Beck, " "
PA—H. C. Smith, " "
GM—F. M. Fritchman, ..Indiana, "
CE—Geo. W. Brymer, " "
MS—C. O. Mellinger, " "
EE—L. W. Householder, Punxsutawney Pa
SCO—Traders Supply Co., Mgr. J. F. Campbell, Iselin, Pa.

BRUSH RUN COAL & COKE CO.
Brush Run Mine, Slope, Pgh. Seam, 7½ ft. thick.
PO—Mt. Pleasant, Pa.; SP—Same; CTY—Westmoreland; RR—B. & O. and P.R.R.
PR—J. D. Hitchman..Mt. Pleasant Pa.
GM—J. D. Hitchman, " "
MS—R. E. Burns.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler, 100 H.P.
EMP—16. Coke ovens, 30 Bee Hive.

BUCKINGHAM COAL MINING CO.
See Pennsy Coal Co.

BUFFALO & SUSQUEHANNA COAL & COKE CO.
General Office, Du Bois, Pa.
PR—James R. Caseley.....Du Bois, Pa.
GM—James R. Caseley, " "
PA—James R. Caseley, " "
GS—James Harvey, " "
CE—C. D. Oldknow, " "
TR—F. R. Lehr.....Buffalo, N. Y.
SM—A. R. McHenry.....Sagamore, Pa.

Sagamore Mine—Drift, Up, Freeport Seam, 68 in. thick.
PO—Sagamore, Pa.; SP—Same; CTY—Armstrong; RR—B. & S.
MS—H. A. Moulder.....Sagamore, Pa.
S of H—12 Elec. loco.; track gauge 42 in.
S of M—72 Comp. Air mach.
PP—10 Water tube boilers, total 3500 H. P., gen. units 550 volts D. C., 4 compressors, 4 pumps.
EMP—1011. Last fiscal year output 794,277 tons.

DuBois No. 1 Mine, Shaft, Lower Freeport Seam.
PO—DuBois, Pa. SP—Same. CTY—Clearfield. RR—B. & S.
MS—Wm. Chick, ... DuBois, Pa.
S of H—Electric.
S of M—Comp. air.
PP—9 boilers, total 1,200 H. P., 500 volts D. C.
EMP—350.

DuBois No. 2 Mine, Shaft, Lower Freeport Seam.
PO—DuBois, Pa. SP—Same. CTY—Clearfield. RR—B. & S.
MS—Hugh McCutcheon,.. DuBois, Pa.
S of H—Electric.
S of M—Comp. air.
PP—5 boilers, total 1,000 H. P., 250 volts D. C.
EMP—475.

BULAH SHAFT COAL CO.
PR—John H. Minds, Philadelphia, Pa.
TR—W. R. Minds, 20 Broadway, N.Y.
GM—Jas. H. Minds.....Ramey, Pa.
PA—Jas. H. Minds, " "
EM—Womelsdorff & Dunkel, Philipsburg, Pa.
SCO—W. R. Minds & Co., New York City, Buyer, W. C. Schwamb, Ramey, Pa.
Sales Agents, Bulah Coal Mining Co., 29 Broadway, New York City.

Bulah Shaft No. 1, Shaft, "D" or Mochannon Seam, 6 to 3 ft. thick.
PO—Ramey, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R., P. & S. of N Y C.
S of H—Mules, track gauge 3 ft.
S of M—Hand
PP—2 Water tube boilers, 1 gen. unit.
EMP—258 Last fiscal year output 127,711 tons.

Webster No. 4, Drift, "D" or Moshannon Seam, 6 to 3 ft. thick.
PO—Ramey, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—2 Water tube boilers, 2 gen. units.
EMP—32. Last fiscal year output 14,838 tons.

BULGER BLOCK COAL CO.
Gen. Office, 6366 Frankstown Ave., Pittsburgh, Pa.
Bulger Mine, Shaft, Pittsburgh Seam, 5½ ft. thick.
PO—Bulger, Pa.; SP—Same; CTY—Washington; RR—P.C.C. & St. L.
PR—D. J. Kennedy....Pittsburgh, Pa.
TR—S. C. Orr, " "
GM—D. J. Kennedy, " "
GS—D. J. Kennedy, " "
PA—D. J. Kennedy, " "
CE—Andrews & Southard, " "
EM—Andrews & Southard, " "
MM—Fred Culp.....Bulger, Pa.
EE—Wm. Jameison.....Midway, Pa.
MS—Leon Randnour.....Bulger, Pa.
S of H—3 Elec. loco.; track gauge 4½ in.
S of M—12 Elec. machines.
PP—3 Monroe Return Tubular Boilers, total 450 H.P., 2 gen. units, 2300 volts A. C., 3 phase, 60 cycles, and 200 volts D. C., 2 pumps.
EMP—350. Last fiscal year output 235,879 tons.
Sales Agent, J. W. Woomer, Pgh., Pa.

BURNS COAL CO.
See M. Burns.

BURNS, M.
General Office, Houtzdale, Pa.
PR—M. Burns .....Houtzdale, Pa.
TR—M. Burns, " "
GM—Wm. Burns, " "
EM—Mr. Ayers, " "
EE—Mr. White, " "
SCO—Grampian Supply Co., Buyer, J. W. Scurman, Grampian, Pa.
Sales Agent, Wm. Burns, Houtzdale, Pa.

Penn No. 3 Mine, Drift, D. & E. Seam, 4 ft. thick.
PO—Grampian, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R., Penn Br.
MS—H. P. Burns.....Houtzdale, Pa.
SM—G. M. Scurman....Grampian, Pa.
S of H—1 Elec. loco., 1 gasoline Motor and mules; track gauge 30 in
S of M—Hand.
PP—1 Pump.
EMP—55.

Penker Mine, Drift, D. & B. Seam, 4 to 4½ ft. thick.
PO—Puritan, Pa.; SP—Same; CTY—Cambria; RR—P.R.R.
MS—Mr. McLarney, ... Puritan, Pa.
S of H—Mules.
S of M—Hand.
EMP—85.

Penn No. 1 Mine, Drift and Slope; "D" Moshannon Seam, 5 ft. thick.
PO—Houtzdale, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R., M. & C. Branch.
MS—M. Burns .....Houtzdale, Pa.
S of H—1 Gasoline motor, mules and rope; track gauge 3 ft.
S of M—Hand.
EMP—21. Last fiscal year output 15,000 tons.

BURTNER, C. P.
Claire Mine, Slope, Lemon "E", Seam 3 1-2 to 4 1-2 ft. thick.
PO—Ashville, Pa., SP—Same, CTY—Cambria.
RR—Penna. R. R.
GM—C. P. Burtner.....Altoona, Pa.
MS—John St. John,.....Ashville "
EM—Jos. S. Sillyman & Co., ..Altoona, Pa.
SCO—Ashville Supply Co.
Buyer—John St. John....Ashville, Pa.
S of H—Mule and rope, track gauge 36 in.
S of M—Hand.
PP—1 150-H. P. boiler, Altoona.
EMP—125.
Sales Agent, C. P. Burtner.

BUTLER JUNCTION COAL CO.
Butler Junction Mine, Drift.
PO—Leechburg, Pa. SP—Butler Jct. CTY—Armstrong. RR—West Penn.
GM—L. W. Hicks, ..Leechburg, Pa.
PA—L. W. Hicks, " "
MS—Wm. Gilson, " "
EM—E. A. Watters, " "
S of H—Elec. loco.
S of M—Hand.
EMP—67 Last fiscal year output 75,150 tons.

BUTTS-CANNEL COAL CO.
See Goff-Kirby Coal Co.

BYRNE COAL & COKE CO.
General Office, Scottdale, Pa.
Byrne Mine; Drift; Seam 8 to 9 ft. thick.
PO—Yukon, Pa.; SP—Same; CTY—Westmoreland; R.R.—P. R. R., Yukon Branch.
PR—Francis W. Byrne, Scottdale, Pa.
TR—Arthur L. Byrne, " "
GM—Ed. Byrne, " "
S of H—Elec. loco.
S of M—2 Goodman elec. mach.
PP—2 Pumps; power purchased.
EMP—100. Coke ovens 40 Bee Hive.

BYRNE, JAMES & CO.
Finley Mine, Drift, Lower Connellsville Seam.
PO—Everson, Pa. SP—Same. CTY—Fayette. RR—Monon.
S of H—Mules.
S of M—Hand.
PP—1 boiler, total 30 H. P.
EMP—30. Coke ovens, 32. State report.

CAMBRIA-SMOKELESS COAL COMPANY.
General Office, Brockwayville, Pa.
Cambria Smokeless Colliery No. 1 Mine, Drift, Miller or B Seam 3½ to 4 ft. thick.
PO—Coalport, Pa.; SP—Same; CTY—Clearfield; RR—Pennsylvania.
PR—T. M. Kurtz.....Punxsutawney, Pa.
TR—Vernon F. Taylor, Brockwayville, Pa.
GM—Vernon F. Taylor, " "
PA—Vernon F. Taylor, " "
MS—George Forsythe .....Coalport, Pa.
SCO—D. F. Edelblute, " "
S of H—Elec.; track gauge 42 in.
S of M—5 Elec. Machines.
PP—1 Gen. Units, 250 Volts D. C., (Pump delivering water to the surface; Power purchased.
Sales Agt., B.E.Taylor, Brockwayville, Pa.
Successors to Blain Run Coal Co.

CAMBRIA STEEL CO.
General Office, Johnstown, Pa.
PR—W. H. Donner, Morris Bldg., Philadelphia, Pa.
PA—F. C. Yeates, Oliver Bldg., Pittsburgh, Pa.
TR—D. B. Gehly, Morris Bldg.,.. Philadelphia, Pa.
GM—E. E. Slick, .. Johnstown, Pa.
GS—H. C. Wolle, " "
GS of M—H. J. Meehan, " "
Chief-Eng—E. W. Clarke, " "
EM—M. G. Moore, " "
MM—J. C. Ogden, " "
EE—C. W. Parkhurst, " "
SM—J. L. Replogle, " "

Rolling Mill Mine, Drift, Cement Seam, 3½ to 4 ft. thick Operate washery.
PO—Johnstown, Pa. SP—Same. CTY—Cambria. RR—P. R. R. and B. & O.
MS—C. H. Crocker.....Johnstown, Pa.
S of H—Mules, rope and 7 compressed air locos. Track gauge 36 in.
S of M—Hand and 40 comp. air mach.
PP—B. & W. water tube boilers, total 2200 H. P., 6 air comp., 3 pumps.
EMP—800. Last fiscal year output, 591,350 tons..

Franklin Nos. 1 and 2 and Conemaugh Slope Mines, Drift and Slope, Cement, "B" or Miller and "E" or Upper Freeport Seams, 3 to 4 ft. thick.
PO—Johnstown, Pa. SP—Same. CTY—Cambria. RR—P. R. R. and B. & O.
MS—C. H. Crocker, .. Johnstown, Pa.
S of H—Mules, rope and 12 elec. locos. Track gauge 42 and 45 in.
S of M—Hand and 10 Comp. air and 12 elec. Machines.
PP—From Steel Works, Central Plant. 2 pumps.
EMP—811 Last fiscal year output 657,243 tons. Coke ovens, 370.

CANN COAL CO
Carver Mine, Shaft, Brookville, Bed A Seam, 4½ ft. thick.
PO—Stoneboro, Pa.; SP—Same, CTY—Mercer; RR—N. Y. C.
PR—Robt. P. Cann,...Stoneboro, Pa.
TR—John C. Cann " "
GM—Robt. P. Cann " "
PA—Robt. P. Cann " "
GS—Robt. P. Cann " "
EM—L. J. Cann " "
S of H—Mules, Rope and 1 elec. loco.. Track gauge 36 inches.
S of M—Hand, and 1 elec. machine.
PP—3 Return tubular boilers, total 450 H. P., 4 gen. units 250 volts D. C., 3 pumps.
(Not in operation)

CANONSBURG GAS COAL CO.
General Office, Marine Bank Bldg., Pittsburgh, Pa.
Shaft Mine; Pgh. Seam, 66 in. thick.
PO—Canonsburg, Pa.; SP—Same; CTY—Washington; RR—P. C. C. & St. L.
PR—H. A. Davis,.....Pittsburgh, Pa.
TR—H. A. Davis, " "
GM—H. A. Davis, " "
PA—H. A. Davis, " "
CE—Randolph-Means Co., " "
EM—Geo. S. Baton & Co., " "
S of H—Elec. loco.
S of M—Elec. mach.
PP—Power purchased.

CARBON COAL & COKE CO.
General Office, 85 Devonshire St., Boston, Mass.
Cambria No. 3, Carbon No. 4, and Ocean Nos. 2, 3, 4 and 5 Mines; Shaft and Drifts; Fulton, Kelly, and Barnett Seams, 46 to 72 in. thick.
PO—Longdale and Dudley, Pa.; SP—Same; CTY—Huntingdon and Bedford; RR—H. & B. T.
PR—Arthur E. Doe....Providence, R. I.
TR—J. Milton Payne, Pawtucket, R. I.
PA—W. W. E. Shannon, Dudley, Pa.
MS—W. W. E. Shannon, " "
SCO—Broad Top Supply Co. Buyer, W. W. E. Shannon, Dudley, Pa.
S of H—Elec. and mules.
S of M—Hand.
PP—4 boilers, total 600 H. P., 1 pump.
EMP—425. Last fiscal year output 187,500 tons.

CARBON COAL & MINING CO.
Mine worked out.

CARDIFF COAL CO
General Office, Greensburg, Pa.
Cardiff Mine, "B" or Miller Vein, Seam 3 ft. 8 in. thick.
PO—Nanty Glo, Pa.; SP—Nanty Glo & Twin Rocks; CTY—Cambria.
RR—P. R. R., Cresson Div.
PR—Julian B. Huff, Greensburg, Pa.
TR—M. W. Saxman,....Latrobe, Pa.
GS—M. J. Bracken,..Gallitzin, Pa.
PA—A. N. Pershing...Greensburg, Pa.
MS—Jas. Walker....Nanty Glo, Pa.
EM—Robt. Morris,....Greensburg, Pa.
S of H—3 Elec. Locomotives.
S of M—Hand and Elec. Machines.
Sales agent, Keystone Coal & Coke Co., Phila., Pa.

CARNEGIE COAL CO.
General Office, Park Bldg., Pittsburgh, Pa.
PR—John A. Bell, ...Pittsburgh, Pa
TR—J.T.M. Stoneroad, " "
GM—J. H. Sanford, " "
GS—Geo. F. Osler, " "
PA—R. B. Haverstick, " "
EM—J. W. Adams, ... Oakdale, "
SCO—Carnegie Supply Co., Pgh., "
Sales agent, J.T.M. Stoneroad, " "

Carnegie Mine, Drift, Pittsburgh Seam, 4½ to 6 ft. thick.
PO—Carnegie, Pa. SP—Same. CTY—Allegheny. RR—P. C. C. & St. L.
MS—Arch Robertson, .. Carnegie, Pa.
S of H—1 elec. loco. and mules. Track gauge 42 in.
S of M—5 elec. machines and band.
PP—3 Erie City boilers, total 300 H. P., 1 gen. unit, 500 volts D. C.
EMP—100. Last fiscal year output 100,000 tons.

Oakdale Mine, Drift, Pittsburgh Seam, 5 to 6 ft. thick.
PO—Oakdale, Pa. SP—Same. CTY—Allegheny. RR—P.C.C.&St.L.
MS—Jos. Linden, ... Oakdale, Pa.
SM—S. M. Reed, " "
S of H—2 elec. locos. and mules. Track gauge 42 in.
S of M—12 elec. machines.
PP—2 Erie City Boilers, total 200 H. P., 1 gen. unit, 500 volts, D. C.
EMP—375. Last fiscal year output 350,000 tons.

Primrose Mine, Drift, Pgh. Seam, 5 to 6 ft. thick.
PO—Primrose, Pa.; SP—Same; CTY—Allegheny. RR—P.C.C.&St.L.
MS—T. D. Smith, ... Primrose, Pa.
SM—J. A. Daudet, " "
S of H—3 elec. locos. and mules. Track gauge 42 in.
S of M—16 elec machines.
PP—4 Erie City boilers, total 400 H.P. 1 gen. unit, 500 volts D. C.
EMP—475. Last fiscal year output 450,000 tons.

Charleroi Mine, Drift, Yough. Gas Seam, 6 to 7 ft. thick.
PO—Charleroi, Pa. SP—W. Monessen. CTY—Washington. RR—P.v.&C.
MS—C. W. Hall, ... Charleroi, Pa.
S of H—14 elec. Locos. Track gauge 42 in.
S of M—20 elec. mach.
PP—Purchase power.
EMP—600. Daily capacity 3,600 tons.

CARNWATH COAL CO
General office, Winburne, Pa.
Carnwath Nos. 1 and 2 Mines; Drift "D" or L. Freeport Seam, 34 to 40 in. thick.
PO—Carnwath, Pa.; SP—Same; CTY—Clearfield; RR—N. Y. C., Potts Run Br.
RR—N. Y. C. & H. R.
PR—M.C. Buchanan, Chambersburg,Pa.
TR—Robt.H.Somerville, Winburne, Pa.
GM—Robt.H.Somerville, " "
CE—E. W. Hess.....Clearfield, Pa.
EE—Fred Patterson..New Millport, Pa.
MS—James Gray.....Carnwath, Pa.
SCO—Carnwath Supply Co. Buyer J. M. Fleck, New Millport, Pa.
S of H—4 Elec loco; track gauge 3ft.
S ofM—3 Elec. mach. and hand.
PP—2 Return tubular boilers, total 250 H. P., 1 gen. unit 250 volts D. C. Purchase power No. 2 Mine.
EMP—350. Last fiscal year output 152,364 tons.
Sales Agencies—C. L. Amos Coal Co., Syracuse, N. Y., Glen Brook Coal Co., Philadelphia, Pa.

CARROLLTOWN COAL CO.
Victor Nos. 1, 2, 3, 4, 6, 9 and 10 Mines, Drifts, Lower Freeport Seam.
PO—St. Benedict, Pa. SP—Same. CTY—Cambria. RR—N. Y. C.
PA—G. E. Metzger, St. Benedict, Pa.
GS—Alex Dunmore, " "
EM—A. M. Dunsmore, " "
SCO—Benedictine Stores Nos. 2 and 3, St. Benedict, Pa. Buyer, F. N. Artley.
S of H—9 elec. locos., mules and rope.
S of M—20 elec. and 18 comp. air machines and hand.
PP—12 return tubular boilers, total 1,730 H. P., 3 air compressors, 10 pumps.
EMP—515. Last fiscal year output 473,324 tons.

CASCADE COAL & COKE CO.
General Office, Buffalo, N. Y.
PR—Hugh Kennedy ....Buffalo, N.Y.
TR—H. M. Van Horn " "
PA—H. M. Van Horn " "
GM—Hugh Kennedy, " "
GS—C. C. Gadd.....Sykesville, Pa.
CE—The W. G. Wilkins Co., Pittsburgh, Pa.
Sykesville Mine, Shaft, Lower Freeport Seam, 5 1-2 ft. thick.
PO—Sykesville, Pa., SP—Sykes, CTY—Jefferson.
RR—Buff. and Susq. and B. R. & P.
MS—C. C. Gadd.....Skyesville, Pa.
S of H—10 Elec. loco., track gauge 42 in.
S of M—28 Compressed air machines.
PP—6 B. & W. Water tube boilers, total H. P. 1812, 3 gen. units 2200 volts A. C. and 250 D. C. 3 Air compressors, 3 pumps.
EMP—462. Last fiscal year output 410,000 tons.
200 Bee Hive coke ovens.
200 Rectangular coke ovens.
Tyler Mine, Drift, Kittanning "B" seam, 44 in. thick, operate Washery.
PO—Tyler, Pa., Sp—Same, CTY—Clearfield.
RR—Buff. & Susq. and Penna. R. R.
MS—G. J. Bammer.....Tyler, Pa.
S of H—13 Elec. loco., track guage 36 in.
S of M—Hand.
PP—6 B. & W. Water tube boilers, total 1208 H. P., 3 gen. units 250 volts D. C., and 2200 volts A. C.
EMP—659. Last fiscal year output 316,000 tons.
400 Bee Hive coke ovens.

CASEY COAL CO.
Shamrock Mine; Drift; Pgh. Seam, 60 to 66 in. thick.
PO—Carnegie, Pa.; SP—Leasdale, Pa.; CTY—Allegheny; RR—P. C. C. & St. L.
PR—D. C. Casey.....Carnegie, Pa.
TR—D. C. Casey, " "
PA—D. C. Casey, " "
GM—D. J. McGarry, " "
S of H—Gravity; track gauge, 30 in. thick.
S of M—Hand.
EMP—9. Last fiscal year output, 8,200 tons.

CASSIDY COAL CO.
PO—Curwensville, Pa.; SP—Hyde, Pa.; CTY—Clearfield; RR—B. R. & P.
PR—Howard Thompson, Curwensville, Pa.
GM—Merritt Cowell, " "
MS—O. B. Morris, " "
Note—Producing 160 to 200 tons per day.

CEDAR HILL COAL MINING CO.
General Office, Harrison Bldg., Philadelphia, Pa.
PR—John Casnave....Philadelphia, Pa.
TR—W. F. Eisenhower, " "
GM—F. D. Casnave, Jr., " "
VP—C. W. Bickford, Osceola Mills, Pa.
GS—C. W. Bickford, " "
PA—C. W. Bickford, " "
EM—H. Shillingford, " "
Lenore Nos. 1 and 2 Mines; Drifts; "E" Seam, 30 to 34 in. thick.
PO—Brisbin, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
MS—Chas. W. Isenberg....Brisbin, Pa.
S of H—Mules; track gauge, 30 in.
S of M—Hand.
EMP—38.
Mountain Branch Mine; Drift.
PO—Houtzdale, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
MS—Chas. W. Isenberg....Brisbin, Pa.
S of H—Mules.
S of M—Hand.
Last fiscal year output, 50,000 tons.
Caswin Mine No. 1; Drift.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
MS—Thos. Green....Osceola Mills, Pa.
S of H—Mules.
S of M—Hand.
Last fiscal year output, 50,000 tons.

CENTRAL YOUGH COAL CO.
General Office, Farmers Bank Bldg., Pittsburgh, Pa.
Shaner Mine; Drift; Pittsburgh Seam, 72 in. thick.
PO—Shaner, Pa.; SP—Same; CTY—Westmorelalnd; RR—B. & O.
PR—Walter R. Calverly, Pittsburgh, Pa.
GM—Walter R. Calverly, " "
GS—Walter R. Calverly, " "
PA—W. A. Luce, " "
S of H—Elec. loco.
S of M—2 Elec. mach.
PP—Power purchased, 1 pump.
EMP—25. Output 200 tons daily, will shortly increase to 500 tons.

CENTRE COAL & COKE CO.
General Office, Osceola Mills, Pa.
PR—C. H. Rowland, ..Phillipsburg, Pa.
GM—C. H. Rowland " "
TR—C. A. Rickenbaugh, Osceola Mills, Pa.
PA—C. A. Rickenbaugh, " "
Weston Mine, Drift, "B" Seam, 4 to 6 ft. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield.
RR—P. R. R.
MS—John O'Neil, Jr...Osceola Mills, Pa.
S of H—1 Elec. loco., track guage 36 in.
S of M—Hand.
PP—Power purchased, 2 pumps.
EMP—90. Last fiscal year output 65,052 tons.
Union No. 3 Mine, "A" Seam 4 ft. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield.
RR—P. R. R.
MS—John O'Neill, Jr., Osceola Mills, Pa.
S of H—Mules, track gauge 36 in.
S of M—Hand.
EMP—9. Last fiscal year output 2,722 tons.

CENTURY COKE CO.
General Office, Uniontown, Pa.
Century Mine, Drift.
PO—Brownsville, Pa.; SP—Simpson, Pa. RR—P.R.R. Monon. Div.
PR—C. E. Lenhart....Uniontown, Pa.
GM—C. E. Lenhart, " "
TR—G. S. Harah, " "
GS—D. C. Sheets.....Brownsville, Pa.
PA—D. C. Sheets, " "
CE—Fayette Engineering Co.
SCO—Century Supply Co., Buyer, L. A. Lenhart, Brownsville, Pa.
S of H—Elec. loco. and mules.
S of M—Hand.
PP—Boiler 100 H P., gen. unit 500 volts D. C.
EMP—210; Coke ovens 205.

CHAMBERS & UZZELL COAL CO.
No. 10 Mine; Drift; "B" Seam, 48 to 66 in. thick.
PO—Clarence, Pa.; SP—Snow Shoe, Pa.; CTY—Centre; RR—P. R. R., Sugar Camp Br.
PR—David Chambers.....Clarence, Pa.
GM—David Chambers, " "
MS—David Chambers, " "
S of H—Mules.
S of M—Hand.
EMP—80. Last fiscal year output, 48,000 tons.
Successors to the Clarence Coal Co.

CHAMPION CONNELLSVILLE COKE CO.
PO—Brownsville, Pa. CTY—Fayette.
GS—M. F. Pickard....Brownsville Pa.
S of H—Mules.
S of M—Hand.
State report.

CHEAT HAVEN COAL & COKE CO.
Now Fancy Hill Coal Works.

CHERRY RUN MINING CO.
Abandoned Sept. 1911.

CHERRY TREE COAL CO.
General Office, St. Benedict, Pa.
Emeigh Nos. 1 and 3 Mines, Slopes and Drifts. Lower Freeport Seam.
PO—Emeigh, Pa. SP—Cherry Tree, Pa. CTY—Cambria. RR—N. Y. C.
PA—G. E. Metzger .....Emeigh, Pa.
MS—A. M. Dunsmore.St. Benedict, Pa.
SCO—Central Trading Corp.
SB—E. T. Harvey....Phillipsburg, Pa.
S of H—Rope and 1 elec. loco.
S of M—8 elec. and 23 comp. air machines.
PP—4 return tubular boilers, total 600 H. P., 2 air comp., 4 pumps.
EMP—274. Last fiscal year output 248,480 tons.

CHESTNUT RIDGE COAL CO.
Chestnut Ridge Mine. CTY—Clarion.
GS—M. A. Lehner....Rimersburg, Pa.
No report.

CHESTNUT RIDGE COAL CINING CO.
General Office, West End Trust Bldg., Philadelphia, Pa.
Indiana No. 6 Mine; Drift; "E" Seam, 5 ft. thick.
PO—Glen Campbell Pa.; SP—Gipsy, Pa., CTY—Indiana; RR—N.Y.C.
PR—Ned Irish.....Philadelphia, Pa.
TR—D. R. Wyeth, " "
GM—George Scott.....Philipsburg, Pa.
PA—George Scott, " "
MS—George Scott, " "
SCO—Mammoth Supply Co., Buyer, George Scott, " "
S of H—1 Gasoline loco. and mules; track gauge 3 ft.
S of M—Hand.
EMP—90. Last fiscal year output 60,000 tons.
Sales Agents, Irish Bros., Phila., Pa.

CHESTON COAL CO.
Cheston Mines, Drift, C. Prime and D. Prime, Seams 3ft. 8 in. to 4 ft. 4 in. thick.
PO—Hastings, Pa.; SP—Same; CTY—Cambria.
RR—P. R. R., C. & C. Div.
PR—Chas. E. Brown.....Hastings, Pa.
GM—Chas. E. Brown, " "
GS—Chas. E. Brown " "
PA—Chas. E. Brown " "
MS—Wm. G. Tyler " "
EM—Chas. E. Schlicher, Spangler, Pa.
S of H—Gravity & Mules; Track Gauge 36 in.
S of M—Hand.
EMP—8. Last fiscal year output 3,311 tons.
Sales Agent, Jas. Pierpoint & Sons, Co., Philadelphia, Pa.

CHURCH HILL MINING CO.
Church Hill Mine; Drift; Kittanning Seam, 42 to 48 in. thick
PO—Leechburg, Pa.; SP—Montgrey, Pa..
GM—L. W. Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
EM—E. A. Watters, " "
MS—A. J. Watson..West Monterey, Pa.
S of H—Elec. loco.
S of M—Elec.
EMP—125. Last fiscal year output, 62,000 tons.

CITIZENS COAL CO.
Gauties, Green Hill and Dale Mines, Slope and Drift; "B" or Miller Seam; and "E" or Coke Yard Seam; 3 ft. 9 in. thick.
PO—Johnstown, Pa.; SP—Same; CTY—Cambria. RR—P. R. R., and B. & O.
PR—W. J. Kuntz.....Johnstown, Pa.
TR—A. M. Custer, " "
GM—Geo. T. Robinson, " "
PA—J. K. Bole, " "
MS—J. K. Bole, " "
SM—J. K. Bole, " "
EM—S. E. Dickey, " "
S of H—Mules and Elec., track gauge 3 ft.
EMP—210. Last fiscal year output 122,000 tons.
Sales Agent, Operators Coal Co

CLARE COAL CO.
General Office, Greensburg, Pa.
Clare Mines; 3 openings; Slope; Connellsville Seam, 96 in. thick.
PO—Latrobe, Pa.; SP—Trauger, Pa.; —Westmoreland. RR—P. R. R., Southwest Br.
PR—James A. Bennett..Greensburg, Pa.
TR—L. E. Walters, " "
GM—L. E. Walters, " "
PA—L. E. Walters, " "
MS—Aaron Koon, R. F. D. No. 3, Latrobe, Pa.
CE—Harrop, Hopkins & Taylor, Pgh, Pa.
MM—George Miller.....Lycippus, Pa.
SCO—Welty Supply Co., Buyer, Ralph E. Hensell, Welty, Pa
S of H—3 Steam loco. and rope, track gauge 40 in.
S of M—Hand.
PP—3 Erie Return tubular boilers, total 225 H. P., 3 compressors and 2 pump.
EMP—150. Coke ovens, 150 Bee Hive. Last fiscal year output 90,000 tons.
Sales Agency, Walter-Wallingford & Co., Cincinnati, O.

CLARENCE COAL CO.
Now Chambers & Uzzell Coal Co.

CLARION COAL MINING COMPANY.
General Office, 740 Land Title Bldg., Philadelphia, Pa.
Clarion No. 1, Drift; Lower Kittanning Seam; 3 to 4½ ft. thick.
PO—Huey, Pa.; SP—Same; CTY—Clarion. RR—P. R. R., Sligo Br.
PR—Henry M. Tracy..Philadelphia, Pa.
TR—Frank Yakle.....Norristown, Pa.
GM—Geo. Scott.....Phillipsburg, Pa.
PA—George Scott, " "
MS—Thomas J. Reese.....Huey, Pa.
SCO—Clarion Supply Co., Huey, Pa.
S of H—2 Elec. locos., track gauge 36 in.
S of M—4 Elec. and 7 comp. air mach.
PP—Boilers total 500 H. P., 150 K. W., 500 volts D. C., 7 compressors, 4 pumps.
EMP—100.
Sales Agent, Mark A. Thompson, Syracuse, N. Y.

CLARK BROS. COAL MINING CO.
General Office, Commonwealth Bldg., Philadelphia, Pa.
PR—J. O. Clark...Glen Campbell, Pa.
TR—S. L. Clark.....Phila., Pa.
PA—J. H. Miller..Glen Campbell, Pa.
GS—J. H. Miller, " " "
SM—W. S. Martz, " " "
Sales Agency, address the Phila. office.
Falcon Nos. 1 and 2 Mines; Drift; "D" Seam, 20 in. to 28 in. thick.
PO—Smoke Run, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R., Moshannon & Maderia Div.
S of H—1 Elec. loco. and mules, track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 150 H. P., 1 pump.
EMP—47. Last fiscal year output, 39,842 tons.
Falcon Nos. 5½ and 7 Mines, Drift; "C" Seam; 5 ft. thick.
PO—Glen Campbell, Pa.; SP—Same; CTY—Indiana. RR—P. R. R., Cush Creek.
MS—John Stewart..Glen Campbell, Pa.
S of H—Mules, track gauge 3 ft.
EMP—20. Last fiscal year output 20,895 tons.
Falcon No. 3 Mine, Drift; "D" Seam, 2 ft. 4 in. thick.
PO—Beccaria, Pa.; SP—Same; CTY—Clearfield. RR — Penna., Moshannon & Maderia Branches.
MS—Thos. Stoker....Smoke Run, Pa.
S of H—Mules, track gauge 3 ft.
S of M—Hand.
EMP—30. Last fiscal year output 12,850 tons.
Falcon No. 4, Drift; "D" Seam; 2 ft. 10 in. thick.
PO—McCartney, Pa.; SP—Same; CTY—Clearfield. RR—P.R.R., Moshannon & Maderia Branches.
MS—Arthur Dufore,....McCartney, Pa.
S of H—Track gauge 3 ft.
S of M—Hand.
EMP—4. Last fiscal year output 764 tons.
Mines Nos. 5, 6 and 8 abandoned.

CLEAR CREEK COAL CO.
General Office, Altoona, Pa.
Drift Mine, Up. Freeport Seam.
PO—Flinton, Pa.; SP—Same; CTY—Cambria; RR—P. R. R., Cresson and Coalport Branch.
PR—M. R. Keesey, ...Altoona, Pa.
Secy—H. B. Tingstad.....Altoona, Pa.
TR—Harry Hahman, " "
Note—Doing development work. Have not begun to ship coal.

CLEARFIELD BITUMINOUS COAL CORP.
General Office, Clearfield, Pa.
GM—H. B. Douglas....Clearfield, Pa.
CS—H. J. Hinterteitner, " "
PA—A. J. Musser. " "
Cooper Mine; Drift; "B" L. Kittanning Seam, 3 ft. thick.
PO—Grassflat Pa.; SP—Peale, Pa.; CTY—Clearfield; RR—N.Y.C. & H.R., Grassflat Branch.
MS—Andrew Frendberg, .. Peale, Pa
S of H—1 Elec. loco. and mules; track gauge 36 in.
S of M—2 Elec. mach. and hand.
PP—2 Return tubular boilers, total 160 H. P., 250 volts D. C., Elec. current from Pleasant Hill mine.
EMP—160. Last fiscal year output 97,863 tons.

Continued on Next Page.

CLEARFIELD BITUMINOUS COAL CORP.—Continued.

Pleasant Hill Mine; Drift; "B" L. Kittanning Seam; 34 in. thick.
PO—Grassflat, Pa.; SP— Peale, Pa.: CTY—Clearfield; RR— N.Y.C. & H.R., Grassflat Branch.
MS—Fred Bass.....Grassflat, Pa.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—3 Elec. mach. and hand.
PP—5 Return tubular boilers, total 700 H. P., 3 gen. units 275 volts D. C., 5 pumps.
EMP—132. Last fiscal year output 109,000 tons.

West Branch Mine; Drift; "D" L. Freeport Seam, 46 in. thick.
PO—Barnesboro, Pa.; SP—Same; CTY—Cambria; RR—N.Y.C.&H.R.
MS—Timothy McCarthy.Barnesboro, Pa.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—3 Elec., 17 comp. air mach. and hand.
PP—7 Return tubular boilers, total 1000 H. P., 2 gen. units, 4100 volts, 3 air compressors and 3 pumps.
EMP—203. Last fiscal year output 151,077 tons.

Sample Run Mine, Slope; "D" L. Freeport Seam, 46 in. thick.
PO—Clymer, Pa.; SP—Same, CTY—Indiana; RR—N. Y. C. & H. R., Cherrytree & Dixonville Branch.
MS—H. H. Hetrick.....Clymer, Pa.
S of H—3 Elec. loco. and rope; track gauge 36 in.
S of M—4 Elec. 9 comp. air mach. and hand.
PP—3 Keeler Return tubular boilers, total 450 H. P., 1 gen. unit 250 volts D. C., 1 comp. and 3 pumps.
EMP—230. Last fiscal year output 174,882 tons.

Barr Mine; Slope; "D" L. Freeport Seam, 42 in. thick.
PO—Clymer, Pa.; SP—Same; CTY—Indiana; RR—N. Y. C. & H. R., Cherrytree & Dixonville Branch.
MS—James Laing ..... Clymer, Pa.
S of H—3 Elec. loco. and rope; track gauge 36 in.
S of M—2 Elec., 10 comp. air mach. and hand.
PP—4 Keeler Return tubular boilers, total 600 H. P., 2 gen. units 250 volts D. C., 1 compressor and 2 pumps.
EMP—207. Last fiscal year output 138,051 tons.

Rossiter Nos. 1, 3 and 4 Mines; "E" Up. Freeport Seam, 4 ft. thick.
PO—Rossiter, Pa.; SP—Same; CTY—Indiana; RR—N. Y. C. & H. R., Rossiter Branch.
MS—J. J. Conner.....Rossiter, Pa.
S of H—16 Elec. loco.; track gauge 36 in.
S of M—9 Elec., 50 comp. air mach. and hand.
PP—3 Keeler Water tube boilers 1200 H. P., 2 turbine gen. units 1500 K. V. A., 2300 volts A. C., 1 compressor.
EMP—700. Last fiscal year output 573,206 tons.

CLEARFIELD COLLIERY CO.
General Office, Clearfield, Pa.
Caldwell Mine, Drift, "D" Seam 3 1-2 ft. thick.
PO—Curwensville, Pa.: SP—Rowles Sta.: CTY—Clearfield.
RR—N. Y. C. & H. R.
GM—A. W. Bigler....Clearfield, Pa.
GS—A. W. Bigler, " "
PA—A. W. Bigler, " "
MS—W. H. Hephart. Curwensville, Pa.
S of H—1 Elec. loco.; track gauge 36 in.
S of M—Hand and 2 Elec. machines.
PP—Buy power.
EMP—80.
Sales Agents, B. Nicoll Co., N.Y.

CLEARFIELD & CAMBRIA COAL & COKE CO.
General Office, Port Deposit, Md.
See Hollow Mines, Drift.
PO—La Jose, Pa. SP—Same. CTY—Clearfield. RR—P. R. R.
PR—Peter E. Tone, Baltimore, Md.
TR—W. W. Hopkins, Port Deposit, Md.
GM—W. W. Thomson.....La Jose, Pa.
PA—W. W. Thomson, " "
MS—W. W. Thomson, " "
S of H—Electric Locomotives.
S of M—Electric Machines and hand.

CLERMONT SEWER PIPE CO.
Lyman Nos. 1 and 2, Shaft; Seam 3 ft. thick.
PO—Clermont, Pa. SP—Same. CTY—McKean.
PR—M. F. Quinn..... Clermont, Pa.
TR—W. E. Ringrose, " "
GM—W. E. Ringrose, " "
PA—W. E. Ringrose, " "
MS—W. M. Dunsmore, " "
S of H—Mules. Track gauge 3 ft.
S of M—1 Compressed Air Machine.
PP—3 boilers, total 300 H. P. 1 compressor, 1 pump.
EMP—25.

CLIMAX COAL CO.
Climax Nos. 1 and 2 Mines; Slopes; "E" Seam, 48 to 60 in. thick.
PO—Lockport, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
PR—C. W. Mills, Land Title Bldg., Phila., Pa.
GM—C. W. Mills, Land Title Bldg., Phila., Pa.
PA—C. W. Mills, Land Title Bldg., Phila., Pa.
SM—C. W. Mills, Land Title Bldg, Phila., Pa.
GS—H. Holl.....Lockport, Pa.
S of M—Hand.
S of H—Mules.
Approximate output for year, 100,000 tons.
Sales Agency, Alden Coal Mng. Co., No. 1 Broadway, N. Y.

CLYDE COAL CO.
Gen. Office, 1120 Bessemer Building, Pittsburgh, Pa.
Clyde Mine, Drift, Pittsburgh River Seam 72 to 96 in. thick.
PO—Fredericktown, Pa.; SP—Same, CTY—Washington; RR— P.R.R., Monongahela Div. and P. M. & S.
PR—James Neale.....Pittsburgh, Pa.
TR—James Stuart Brown, " "
GM—Jas. G. Geegan, " "
PA—Jas. G. Geegan, " "
CE—Geo. S. Baton, " "
EM—Geo. S. Baton, " "
MS—Jno. Shaw ...Fredericktown, Pa.
MM—Wm. Toward, " "
SCO—Clyde Supply Co., Buyer, I. A. Griffith, Fredericktown, Pa.
S of H—Horses and 7 Elec. loco.; track
PP—6 pumps. Purchase power.
S of M—10 Elec. mining machines.
PP—6. 6 Pumps. Purchase power.
EMP—250. Last fiscal year output 206,736 tons. 2 Bee Hive coke ovens.

CLYMER BRICK & FIRE CLAY CO.
Clymer No. 1 Mine; Seam, 42 in. thick.
PO—Clymer, Pa.; SP—Same; CTY—Indiana; RR—P. R. R., N. Y. C. & H.
PR—John S. Richer.....Clymer, Pa.
TR—R. A. Henderson, " "
GM—G. W. Lenkerd, " "
S of H—Mules.
S of M—Hand.
EMP—25. Last fiscal year output, 12,000 tons.
Mine coal for their own use.

COALMONT COAL MINING CO.
General Office, 716 Land Title Bldg., Philadelphia, Pa.
Coalmont Mine; 4 ft. thick.
PO—Philipsburg, Pa.; SP—Same; CTY—Center; RR—Pgh. & Susq.
PR—H. Turner, ...Philadelphia, Pa.
GM—H. Turner, " "
TR—Justice Cox, Jr., " "
PA—Justice Cox, Jr., " "
GS—William Geayer.....Philipsburg, Pa.
S of H—Mules.
S of M—Hand.
Sales Agent, H. Turner, Philadelphia, Pa.
Note—2Mines in operation capacity from four to six cars per day.

COAL RUN MNG. CO.
Coal Run Nos. 1 and 2 Mines. CTY—Indiana; RR—B. R. & P.
GS—F. M. Fritchman.....Indiana, Pa.
MS—John Clifford.....Homer City, Pa.
State report.

COALDALE MINING CO.
Sold to James Stott.

COCHRAN BROS.
Spring Grove Mine, Drift, Connellsville Seam, 9 ft. thick.
PO—Dawson, Pa.; SP—Same; CTY—Fayette; RR—B. & O., Heckman Run Branch.
PR—A. J. Cochran.....Dawson, Pa.
TR—A. J. Cochran, " "
GM—A. J. Cochran, " "
GS—A. J. Cochran, " "
MS—Jas. A. Hay, " "
CE—Thos. Zimmerman, " "
SCO—Dawson Supply Co., Ltd., Dawson, Pa., Buyer, J. O. Ransel.
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—25. Coke ovens, 61 Bee Hive.
Sales Agent, A. J. Cochran, Dawson, Pa.

COCHRAN COAL CO.
Cochran Mine No. 1, Drift. Upper Freeport Seam, 45 to 52 in. thick.
PO—Salina, Pa. SP—Same. CTY—Westmoreland RR—P. R. R., Conemaugh Div.
PR—G. D. Tinsman....Williamsport, Pa.
TR—R. T. S. Steele, Williamsport, "
GM—W. H. Miller.....Salina, Pa.
PA—W. H. Miller .... Salina, Pa.
MS—W. H. Miller, " "
CE—W. H. Miller, " "
EM—A. Rorabaugh, " "
EE—James Woodmensee, " "
MM—S. S. Brown, " "
SCO—Bitumen Supply Co. Buyer J. E. Fillinger, Saline, Pa.
S of H—4 Elec. Loco. Track gauge 42 in.
S of M—11 Elec. machines.
PP—2 Erie City Return tubular boilers, total 300 H. P. 1 Gen. Unit, 275 volts A. C. 1 phase 60 cycle, 4 pumps.
EMP—197. Last fiscal year output 144,825 tons.

COLONIAL COAL COMPANY.
Out of business.

COLONIAL IRON CO.
Judith Mine, Slope, Kelly Seam, 3 ft. 10 in. to 4 ft. thick.
PO—Riddlesburg, Pa.; SP—Same; CTY—Bedford; RR—H. & B.T.
PR—C. M. Smith.....New York, N.Y.
TR—C. M. Smith, " " "
VP—Wm. Lauder .....Riddlesburg, Pa.
GS—E. P. Ross.....Riddlesburg, Pa.
MS—I. C. Allen, " "
S of H—Rope, 1 steam loco., track gauge 38 in.
S of M—Hand.
PP—2 Return tubular boilers, 1 air compressor and 5 pumps, 198 Bee Hive coke ovens.

COMMERCIAL COAL MINING CO.
General Office, Commercial Trust Bldg., Philadelphia, Pa.
Commercial Nos. 3, 4 and 5 Mines; Slope and drift; "B" Seam, 41-49 in. thick.
PO—Expedit, Pa. SP—Twin Rocks, Pa. CTY—Cambria. RR—P. R. R., Ebensburg & Blacklick Branch.
PR—M. B. Courtright, Philadelphia, Pa.
TR—Chas. V. Bergh, " "
GS—W. C. Smith, ... Expedit, Pa.
MS—W. C. Smith, " "
EM—R. W. Weary, " "
EE—J. C. Dingwall, " "
SCO—Big Bend Supply Co. Buyer, W. C. Shiffer, Expedit, Pa.
S of H—7 Elec. loco and rope. Track gauge 36 in.
S of M—Hand and elec. machines.
PP—Power purchased.
EMP—553.. Last fiscal year output, 412,050 tons.

CONAWAY, T. C. COAL COMPANY.
General Office, Bridgeville, Pa.
Cathryn Mine.
PO—Federal, Pa.SP—Same. CTY —Allegheny. RR—P. C. & Y.
GM—John M. Heany, ..Bridgeville, Pa.
PA—John M. Heany, " "
MS—John Kelly, " "
S of H—2 Elec. locos.
S of M—Hand.
PP—Purchase power.

CONEMAUGH COAL CO.
General Office, Blairsville, Pa.
Conemaugh Mine; Drift; Pgh. Seam, 5½ ft. to 7½ ft. thick.
PR—T. L. Eyre....West Chester, Pa.
TR—Wilbur P. Graff....Blairsville, Pa.
GM—Frank M. Graff, " "
PA—Frank M. Graff, " "
MS—Ernest Fletcher....Saltsburg, Pa
CE—Albert Smith, " "
MM—Chancy Shipley, " "
SCO—Kiskiminitas Supply Co. (Saltsburg Store), Buyer, Wm. G. Fletcher, Blairsville, Pa.
SM—John A. Fletcher....Saltsburg, Pa.
S of H—1 Elec. loco and mules, track gauge 42 in.
S of M—Hand.
PP—2 Return tubular boilers total 230 H.P. 1 100 K. W. gen. unit 250 volts D. C. 3 pumps.
EMP—156. Last fiscal year output 117,520 tons.
Sales Agent, Knickerbocker Fuel Co., New York, N. Y.

CONEMAUGH COAL MINING CO.
PR—T. J. Pearce.....Portage, Pa.
Note—Opening new mine near Conemaugh, Pa. No report.

CONEMAUGH SMOKELESS COAL CO.
General Office, Johnstown, Pa.
Shaft and Slope Mines; "B" Seam, 3 ft. 8 in. to 4 ft. 2 in. thick.
PO—Seward, Pa.; SP—Same; CTY—Indiana; RR—P. R. R.
PR—Geo. T. Robinson, Johnstown, Pa.
GM—Geo. T. Robinson, " "
TR—Wm. J. Kuntz, " "
GS—Geo. Haddell, ...Seward, Pa.
CE—S. M. Marshall.
S of H—Elec.

CONEMAUGH VALLEY COAL MINING CO.
Out of business.

CONNELLSVILLE CENTRAL COKE CO.
General Office, Pittsburgh, Pa.
PR—Herbert DuPuy.....Pittsburgh, Pa.
TR—John C. Neff, " "
GM—John C. Neff, " "
GS—C. E. Bortz.....Uniontown, Pa.
SCO—Klondike Supply Co., Pgh., Pa.

Herbert Mine, Shaft, Pgh. Seam, 9 ft. thick.
PO—New Salem, Pa.; SP—Low Phos, Pa.; CTY—Fayette; RR—P.R.R., Monongahela Div.
S of H—Rope; track gauge 44 in.
S of M—10 Comp. air mach. and hand.
PP—8 Return tubular boilers, total 1,200 H.P., 2 gen. units, 250 volts D.C., 2 air compressors and 1 pump.
EMP—300. Last fiscal year output 160,000 tons. Coke ovens 210 rectangular.

Low Phos Mine, Slope, Pgh. Seam, 9 ft. thick.
PO—Uniontown, Pa.; SP—Low Phos, Pa.; CTY—Fayette; RR—P.R.R., Monongahela Branch.
S of H—Rope.
S of M—Hand.
PP—4 Return tubular boilers, total 600 H.P., 1 gen. unit, 250 volts D.C., 1 air compressor, 1 pump.
EMP—185. Last fiscal year output 120,000 tons. Coke ovens, 250 Bee Hive.

CONNELLSVILLE COAL & COKE CO.
General Office, Connellsville, Pa.
1 Mine in Pa., 2 mines in W. Va.
Stoner Mine, Drift, Pgh. Seam, 8-9 ft. thick.
PO—Connellsville, Pa.; SP—Alverton, Pa.; CTY—Westmoreland; RR— P. R.R.
PR—W. D. McGinnis..Connellsville, Pa.
PA—W. D. McGinnis, " "
TR—A. C .Stickel, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—8. Last fiscal year output 12,000 tons.

CONNELLSVILLE COKE CO.
General Office, Connellsville, Pa.
Dexter Mine, Drift, Pittsburgh Seam 8 to 9 ft. thick.
PO—Scottdale, Pa. SP—West Overton, Pa.; CTY—Fayette. RR—B. & O.
PR—J. Fred Kurtz..Connellsville, Pa.
GM—J. Fred Kurtz, " "
PA—J. Fred Kurtz, " "
TR—W. D. McGinnis, " "
MS—James J. Brown, " "
EM—S. M. Foust, " "
S of H—Mules; track gauge 39½ in.
S of M—Hand.
PP—Purchase power.
EMP—40. Coke ovens, 40 Bee Hive. Last fiscal year output 24,553 tons. Sales Agent, Connellsville Coke Co

CONNELLSVILLE COKE & FUEL CO.
General Office, Connellsville, Pa.
Drift Mine; Connellsville Seam, 96 in. thick.
PO—Ligonier, Pa.; SP—Same; CTY—Westmoreland, RR—P. R. R., L. V.
PR—R. Marietta.....Connellsville, Pa.
GM—R. Marietta, " "
SM—R. Marietta, " "
TR—W. H. Soisson, " "
PA—W. H. Soisson, " "
CE—S. M. Foust. " "
GS—C. B. Marietta.....Ligonier, Pa.
S of H—Mules.
S of M—Hand.
PP—1 Water Tube and 1 Erie return tubular boiler; total 125 H. P., 1 compressor. Coke ovens 80 Bee Hive.
Note—Not running at present July 24.

CONNELLSVILLE MUTUAL COKE CO
General Office, Scottdale, Pa.
Love Mine; Drift; Connellsville Seam, 109 in. thick.
PO—Greensburg, Pa.; SP—Mutual, Pa.; CTY—Westmoreland; RR—P. R. R.
PR—R. B. Hays.....Masontown, Pa.
TR—John R. Byrne....Scottdale, Pa.
GM—John R. Byrne, " "
PA—John R. Byrne, " "
MS—Walter Dawson.....Mutual, Pa.
CE—E. C. McCullough..Uniontown, Pa.
S of H—Mules.
S of M—Hand.
Coke ovens, 32 Bee Hive.
Idle at present, June 20.

CONSOLIDATED COKE CO.
General Office, Uniontown, Pa.
PR—George Whyel .....Uniontown, Pa.
TR—I. W. Semans, " "
Sec—F. E. Weddell, " "
GM—George Whyel, " "
PA—J. D. Armstrong. " "
Consulting Chemist Alexander Fleming, Uniontown, Pa.
SCO—Southern Supply Co., Buyer, J. H. Yoder, Uniontown, Pa.

Continued on Next Page.

Donald Nos. 1 and 2 Mines, Drifts, Pgh. Seam, 7 to 9 ft. thick.
PO Grays Landing, Pa.; SP—Same; CTY—Fayette; RR—M.R.R.
MS A. J. Foy.....Grays Landing, Pa.
SM—M. S. Simpson, " "
S of H—Mules and 3 elec. loco.; track gauge 42 in.
S of M—Hand and 2 elec. machines.
PP—7 Erie and Phoenix Water Tube Boilers, total 1,050 H.P., 2 gen. units, 250 volts D.C.
EMP—400. Last fiscal year output 277,000 tons. 402 Bee Hive coke ovens.

Donald No. 3, Slope, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Grays Landing, Pa.; SP—Same, CTY—Fayette; RR—M.R.R.
MS—A. J. Foy.....Gray sLanding, Pa
SM—M. S. Simpson, " "
S of H—1 Elec. motor, mules and rope; track gauge 44 in.
S of M—Hand and 5 comp. air machs.
PP—4 Erie Water Tube Boilers, total 600 H.P.
EMP—300. Last fiscal year output 110,000 tons. 160 Bee Hive coke ovens.

Sterling, Shaft, Pgh. Seam, 7 to 9 ft. thick.
PO—Mount Sterling, Pa.; SP—Masontown Station, Pa.; CTY—Fayette; RR—M.R.R.
MS—A. J. Foy.....Grays Landing, Pa
SM—W. J. Sheets, " "
S of H—Mules and 3 elec. loco.; track gauge 44 in.
S of M—Hand and 12 comp. air machines.
PP—8 Phoenix Water Tube Boilers, total 1,600 H.P., 3 gen. units. 250 volts D. C., 3 air compressors, 2 pumps.
EMP—400. Last fiscal year output 216,000 tons. 310 Bee Hive coke ovens.

CONSOLIDATED CONNELLSVILLE COKE CO.
Now Consolidated Coke Co.

CONSOLIDATION COAL CO., THE
General Office, Continental Building, Baltimore, Md.
101 Mines in Md., West Va., Pa., and Ky.
Chairman of Board, C. W. Watson, Baltimore, Md.
PR—J. H. Wheelwright, " "
Secy—T. K. Stuart, " "
Mgr. of Trans—W. L. Andrews, " "
Genl. Auditor—A. S. Dunham, " "
VP—F. S. Landstreet, Bankers Trust Bldg., New York, N. Y.
VP—Geo. T. Watson..Fairmont, W. Va.
TR—S. L. Watson, " "
GM—F. R. Lyon, " "
PA—A. T. Watson, " "
PA—Asst., F. C. Davis, " "
CE—Frank Haas, " "
CE—Asst., J. C. Gaskill, " "
Chief Engineer, All Divisions—John G. Smyth .....Fairmont, W. Va.
Supt. P. & M. Dept.—R. L. Kingsland, Fairmont, W. Va.
Eng. of Tests—R. E. Rightmire, Fairmont, W. Va.
Live Stock Buyer—Frank Amos, Fairmont, W. Va.
Genl. Mgr. of Sales—F. W. Wilshire, Bankers Trust Bldg., New York, N.Y.
Western Mgr. of Sales—E. M. Mancourt, Fisher Bldg., Chicago, Ill.

GS—Samuel Steinbach....Somerset, Pa.
EM—Alfred Pearson, " "
EE—A. F. Finneran .... Jenner, Pa.
SCO—The Dull Mercantile Co., Somerset, Pa.; Buyer G. G. Michaels, Fairmont, W. Va.

Consolidation Nos. 118, 119 Mines; Drift and Slope; C. Prime and E Seams, 3½ to 5 ft. thick.
PO—Jenners, Pa.; SP—Same; CTY—Somerset; RR—B. & O., Boswell Branch.
MS—F. F. Lyon.....Jenner, Pa.
SM—C. A. Bevans, " "
S of H—17 Elec. loco., and rope; track gauge, 42 in.
S of M—32 Elec. mach. and hand.
PP—6 B. & W., 1 Carlins, 1 Erie, return tubular boilers, total 2480 H. P. 7 gen. units, 2300 volts A.C. 3 phase, 60 cycles, 4 pumps.
EMP—692. Last fiscal year output 656,194 tons.

Consolidation 101, 102, 104, 105, 106 Mines, Drifts; Pgh. and Redstone Seams; 4 to 10 ft. thick.
PO—Meyersdale, Pa.; SP— Consol 104, PA.; CTY—Somerset. RR—B. & O. Salisbury Branch.
MS—A. G. Smyth....Meyersdale, Pa.
SM—R. F. Mason, " "
S of H—Mules and 7 Elec. loco., track gauge 40 and 42 in
S of M—Hand.

PP—4 Return tubular boilers, 2 Erie, 1 Atlas, and 1 Union, total 400 H. P., 4 gen. units, 500 volts, D. C.; 8 pumps.
EMP—397. Last fiscal year output 363,155 tons. Coke ovens, 225 Bee Hive.

Consolidation 108—114 Mines, Drift; "A" Seam; 3 to 9 ft. thick.
PO—Rockwood, Pa.; SP—Some; CTY—Somerset. RR—B. & O., Wilson Creek.
MS—Hilton Thornley, R. F. D. Rockwood, Pa.
SM—Robt. Meyers, " "
S of H—Mules and 1 Elec. loco., track gauge 42 in.
S of M—Hand.
PP—4 Return tubular boilers, 2 union 2 Erie, total 600 H. P., 2 gen. units. 250 volts, D. C.; 2 pumps.
EMP—137. Last fiscal year output 113,386 tons.

Consolidation No. 117 Mine; Slope "C" Prime; 3 to 4½ ft. thick.
PO—Riaphton, Pa. SP—Stoughton, Pa. CTY—Somerset. RR—B. & O. Boswell Div.
MS—F. F. Lyon, Jenner, Pa.
SM—Mahlon Warnick, Ralphton, Pa.
S of H—1 Elec. loco. and rope. Track gauge 42 in.
S of M—Hand.
PP—3 Erie City return tubular boilers, total 380 H. P. 1 gen. unit, 250 volts D. C. 2 pumps.
EMP—46. Last fiscal year output 58,416 tons.

Consolidation Nos. 112, 113 Mines; Pine Hill Nos. 1 and 2 Seam 3 to 5 ft. thick.
PO—Pine Hill, Pa. SP—Consolidotion Nos. 112, 113, Pa. CITY—Somerset. RR—B. & O., Berlin Branch.
MS—Harry Phillips.....Pine Hill, Pa.
SM—J. G. Smith, " "
S of H—3 Elec. mach. and mules. Track gauge 42 in.
S of M—2 Elec. mach. and hand
PP—1 Jeffrey, 1 Amos, 1 Erie return tubular boilers, total 425 H. P. 1 Gen. unit, 5 pumps.
EMP—250. Last fiscal year output 202,259 tons.

Consolidation No. 120 Mine, Drift, C. Prime Seam, 3½ to 4 ft. thick.
PO—Acosta, Pa. SP—Same. CTY — Somerset. RR—B. & O., Boswell Div.
MS—John Byron, ... Acosta, Po.
SM—Theodore Reese, " "
S of H—10 Elec. loco.
S of M—24 Elec. mach. and hand.
PP—2 Return tubular boilers, total 150 H. P. 1 pump. Power combined from 118, 119, 120 mines.
EMP—395. Last fiscal year output 441,965 tons.

Consolidation Nos. 123 and 124 Mines; Shaft; "E" Seam, 42 to 54 in. thick.
PO—R. F. D. No. 2, Boswell, Pa.; SP—Acosta, Pa.; CTY—Somerset; RR—B. & O., Boswell Br.
MS—Jas. Nixon, R. F. D. No. 2, Boswell, Pa.
S of H—2 Elec. loco.; track gauge, 42 in.
S of M—6 Elec. mach.
PP—Central power plant; 2 pumps.
EMP—40. Output, 1,000 tons.

Consolidation No. 115 Mine, Drift, "C" Prime Seam, 4 to 6 ft. thick.
PO—Listie, Pa. SP—Same. CTY — Somerset. RR—B. & O., S. & C. Branch.
MS—Hilton Thornley....Rockwood, Pa.
SM—Albert Huston, Listie, Pa.
S of H—1 Elec. loco. and mules. Track gauge 42 in.
S of M—Hand.
PP—2 Erie City return tubular boilers, total 200 H. P.; 1 gen. unit 250 volts D. C., 1 pump.
EMP—54. Last fiscal year output, 57,241 tons.

CORBETT COAL CO.
Seam 44 to 60 in. thick
PO—Timblin, Pa.; SP—Same; CTY—Jefferson; RR—P. S. & N.
PR—E. A. Corbett, ...Timblin, Pa.
TR—Jas. H. Corbett, Jr., " "
PA—Jas. H. Corbett, Jr., " "
GS—Samuel Walwork, " "
S of H—Elec. loco.
S of M—Elec. Mach.

CO-OPERATIVE COAL CO.
Underwood Mine—Drift, L. Kittanning Seam, 30 to 40 in. thick.
PO—Strattonville, Pa.; SP—Walerson, Pa.; CTY—Clarion; RR—L. E. F. & C.
PR—J. N. Beveridge.....Corsica, Pa.
MS—J. N. Beveridge, " "
TR—W. F. Davis.....Strattonville, Pa.
S of H Mules.
S of M—Hand.
EMP—18. Last fiscal year output 12,550 tons.

CORNELL COAL CO.
Glassmere Colliery, Slope, Freeport Seam, 5½ to 7 ft. thick.
PO—Hite, Pa.; SP—Glassmore, Pa.; CTY—Allegheny; RR—P. R. R., Conemaugh Div.
PR—W. A. Iseman.....Hite, Pa.
TR—T. G. Cornell.....Freeport, Pa.
GM—W. A. Iseman.....Hite, Pa.
GS—W. A. Iseman, " "
PA—W. A. Iseman, " "
MS—G. W. Smith.....Tarentum, Pa.
EM—D. E. Taylor.....Freeport, Pa.
EE—C. A. Fisher, New Kensington, Pa.
MM—I. V. Wolf.....Anold, Pa.
S of H—Rope, mules, 3 Elec. loco.; track gauge 44 in.
S of M—6 Elec. mach.
PP—4 Water tube boilers, total 600 H.P.; also purchase power.
EMP—255. Last fiscal year output 350,000 tons.

CORNING BLOSSBURG COAL CORP.
General Office, Corning, N. Y.
Coal Run Mine; Drift; Bloss and Bear Creek Seams, 20 to 32 in. thick.
PO—Blossburg, Pa.; SP—Same; CTY—Tioga; RR—N. Y. C. & H. R.
PR—J. D. Carlton.....Corning, N. Y.
TR—Guy W. Cheney, " "
MS—Chas. Schultz.....Blossburg, Pa.
S of H—Mules.
S of M—Hand.
EMP—12-15. Last fiscal year output, 3,600 tons.
Successors to the Blossburg & Coal Run Coal Co.

CORONA COAL & COKE CO.
Bucher, Corona, Davis and Shoff Mines; Drifts, "B" Seam, 5 to 3½ ft. thick.
PO—Madera, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R., N.Y.C. & H. R., Tyrone Div.
PR—T. S. Shoemaker..Philadelphia, Pa.
TR—H. B. Swoope.....Madera, Pa.
GM—H. B. Swoope, " "
PA—H. B. Swoope, " "
CS—John Stevenson, " "
EM—S. R. Moore, " "
SCO—Madera Trading Co., Buyer, G. B. Curry, Madera, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand, 1 Elec. and 15 Comp. air mach.
PP—2 Water tube boilers, total 200 H. P., compressors and 5 pumps.
EMP—283. Last fiscal year output 228,829 tons.

CORTEZ COAL CO.
General Office, Punxsutawney, Pa.
Cortez No. 1 and 2 Mine, Drift, Lower Freeport Seam, 3 to 5 ft. thick.
PO—Anita, Pa.; SP—Same; CTY—Jefferson; RR—P.R.R., P. & N. W. Branch.
GM—R. Hampson ..Punxsutawney, Pa..
MS—John R. Hampson, " "
S of H—Mules; track gauge 3 ft. 6 in.
S of M—Hand.
EMP—44. Last fiscal year output 27,576 tons.

COWANSHANNOCK COAL & COKE CO.
General Office, Punxsutawney, Pa.
Yatesboro Mine, Slope, Upper Freeport Seam, 4 ft. thick.
PO—Yatesboro, Pa.; SP—Same; CTY—Armstrong; RR—Rural Valley.
PR—L. W. Robinson, Punxsutawney, Pa.
GM—L. W. Robinson, " "
PA—L. W. Robinson, " "
CE—L. W. Householder, " "
EM—J. S. Scott, " "
TR—Wm. G. Miller.....Yatesboro, Pa.
GS—James Craig, " "
MM—J. E. Dickey, " "
EE—B. J. Clark, " "
SCO—Valley Supply Co., Buyer, Wm. G. Miller, Yatesboro, Pa.
S of H—28 Elec. loco. and rope.
S of M—28 Elec. machines.
PP—Sterling Water Tube Boiler, 6,000 volts A.C., 60 cycles.
EMP—1300. Last fiscal year output 1,250,000 tons.

CRAIG-GOULD COAL CO.
Sarah Mine; Slope; "B" Seam, 54 in. thick.
PO—Brisbin, Pa.; SP—Same; CTY—Clearfield; RR—P. & S.
PR—W. A. Gould.....Brisbin, Pa.
TR—Frank Craig, " "
GM—Michael Craig, " "
EM—Michael Craig, " "
MS—Michael Craig, " "
PA—Thomas .V Gould, " "
MM—Fred Merritt, " "
EE—Fred Merritt " "
SCO—W. A. Gould & Bro., " "
S of H Mules and rope; track gauge, 36 in
S of M—Hand
PP—Power purchased
EMP—50.
Sales Agency, W. A. Gould & Bro, Brisbin, Pa.
New operation

CRAMER COAL, COKE & STONE CO.
Draft Mine; "B" Seam
PO—Johnstown, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
GM—John Thomas, Jr., Johnstown, Pa.
S of H—Elec.
S of M—Hand.
PP—Power purchased.

CREIGHTON COAL WORKS.
See Pittsburgh Plate Glass Co.

CRESCENT COAL CO.
General Office, 2nd Nat. Bank Bldg., Pittsburgh, Pa.
PR—S. A. Taylor.....Pittsburgh, Pa.
TR—J. W. Ailes, " "
PA—J. W. Ailes, "
GS Jos. Arkwright .....Epton, Pa.
EM—Harrop, Hopkins & Taylor, Pgh., Pa.
MM—John Schneinsberg, ..Rodfield, Pa.
EE—Jos. Whiteman .....Epton, Pa.
Sales Agent, Valley Camp Coal Co., Cleveland, O.

Peters Creek No. 2, Drift, Pittsburgh Seam, 5 to 6 ft. thick.
PO—Epton, Pa.; SP—Wilson, Pa.; CTY—Allegheny; RR—P.R.R., Mon. Div.
S of H—Mules and 5 elec. loco.; track gauge 43½ in.
S of M—Hand and 10 elec. machines.
PP—3 Return tubular boilers, 1 Erie and 2 Union Iron Works, total 450 H.P., 2 gen. units, 250 volts A.C.
EMP—350. Last fiscal year output 244,000 tons.

Peters Creek No. 3, Drift, Pittsburgh Seam, 5 to 6 ft. thick.
PO—Epton, Pa.; SP—Wilson, Pa.; CTY—Allegheny; RR—P.R.R., Mon. Div.
gauge 43½ in.
S of M—Hand and 3 elec. machines.
S of H—Mules and 1 elec. loco.; track
PP—Power is furnished from No. 2 mine.

CRESCENT COAL & COKE CO.
General Office, Connellsville, Pa.
Middle Run Mine, Slope.
PO—McClellandtown, Pa. SP—Lambert Siding, care of C. C. & C. Co. CTY—Fayette. RR—Penna. Co.
PR—Juilian Jiulius .McClellandtown, Pa.
TR—E. Nannini .....Connellsville, Pa.
GM—Juilian Jiulius.McClellandtown, Pa.
PA—E. Nannini ....Connellsville, Pa.
S of H—Mules. "
PP—1 pump, power purchased.
EMP—14.
Sales agency, E. Nannini, Connellsville, Pa.

CROWN HILL COAL MINING CO.
Crown Hill No. 1 Mine; Drift; "B" Seam 3 1-2 to 4 ft. thick.
PO—Indiana, Pa.; SP—Homer City; Pa.; CTY—Indiana; RR—P. R. R., Snyder Branch to Possum Glory, Conamaugh Div.
PR—W. C. Lowther.....Indiana, Pa.
GM—W. C. Lowther, " "
TR—M. A. Lowther, " "
MS—John Hunter, R.F.D. " "
CE—Thomas Pealor, " "
S of H—Elec. loco.; track gauge 42 in.
S of M—Elec. mach.

CRUCIBLE COAL CO.
Gen. Office, Empire Bldg., Pgh., Pa.
Crucible Mine, 2 Shafts, Pgh. Seam, 7½ ft. thick.
PO—Crucible, Pa.; SP—Same; CTY—Greene; RR—P.R.R., Mon. Div.
PR—C. C. Ramsey.....Pittsburgh, Pa.
TR—Geo. A. Turville, " "
GM—John C. Neff, " "
PA—John C. Neff, " "
GS—Robt. Holliday .....Crucible, Pa.
CE—H. J. Lewis, ...Pittsburgh, Pa.
MM—G. P. Hardy, " "
EE—G. P. Hardy, " "
EM—Fayette Eng. Co., Uniontown, Pa.
S of H—2 gasoline loco.; track gauge 44 in.
S of M—8 Elec. mach.
PP—6 water tube B. & W. boilers, total 1,500 H. P., 2 gen. units, 250 volts D. C., 1 compressor.
EMP—250. Last fiscal year output 222,000 tons.

CUBA COAL CO.
Cuba No. 1, Gearhart, Jefferson, Colorado Nos. 3 and 4; Mines; Drift; "E" Moshannon and "B" Seam; 3½ to 5ft. thick.
PO—Philipsburg, Pa.; SP—Some; CTY—Center; RR—P. R. R., N. Y. C. & H. R.
GM—George Trumble....Morrisdale, Pa.
S of H—Mules, track gauge 36 in.
S of M—Hand.
Sales Agency, H. B. Scott & Co., Philipsburg, Pa.

CUNARD COAL CO.
General Office, Philadelphia, Pa.
Cunard Mine; Slope; 54 to 60 in. thick.
PO—Morrisdale, Pa.; SP—Same; CTY—Clearfield; RR—N. Y. C. & H. R. R. R.
PR—Harry Boulton.....Houtzdale, Pa.
TR—C. B. Maxwell, Morrisdale, Pa.
EM—Lee Smith, " "
GS—C. B. Maxwell, " "
..PA—C. B. Maxwell, " "
PA—C. B. Maxwell, " "
MS—R. F. Alstadt, " "
EE—Alex. Campbell, " "
S of H—2 Elec. loco.; track gauge, 37 in.
S of M—2 Elec. Mach.
PP—Power purchased.
EMP—80.
Output — Development completed for 1000 tons per day.

CUNNINGHAM COAL CO.
Chicora Mine; Drift; Upper Freeport Seam, 44 to 50 in. thick.
PO—Chicora, Pa.; SP—Same; CTY—Butler; RR—B. & O., P. & W. Br.
PR—C. H. Johnson, Sr.....Chicora, Pa.
TR—C. H. Cunningham..Pittsburgh, Pa.
GM—A. Rasner, " "
PA—Geo. H. Fox.....Chicora, Pa.
MS—Geo. H. Fox, " "
MM—Geo. H. Fox, " "
EE—Geo. H. Fox, " "
S of H—2 Elec. loco.; track gauge 30 in.
S of M—Hand and 2 Elec mach.
PP—I Water tube boiler, total 150 H. P., 1 gen. unit 275 volts D. C., 1 pump.
EMP—80. Last fiscal year output 63,000 tons.
Sales Agent, Geo. H. Fox, Chicora, Pa.

CYMBRIA COAL COMPANY.
General Office, Philadelphia, Pa.
Cymbria Mines; Drift and Shaft; "D" and "E" Seams, 48 to 60 in. thick.
PO—Cymbria Mines, Pa.; SP—Barnesboro, Pa.; CTY—Cambria. RR—P. R. R., Walnut Run Branch.
PR—David E. Williams....Phila., Pa.
TR—G. B. Roberts, " "
PA—A. Y. Stevenson, " "
GM—A. M. Riddell.....Altoona, Pa.
MS—Harry Goodall . Cymbria Mines Pa.
CE—A. B. Critchton....Johnstown, Pa.
EM—A. B. Critchton, " "
SCO—Excelsior Store Co., Buyer, W. P. Griest, Cymbria Mines, Pa.
S of H—4 Elec. loco., track gauge 3 ft.
S of M—Hand and 3 Elec. mach.
PP—3 pumps. Power purchased.
EMP—125. Last fiscal yeor output 133,900 tons.
Sales Agent, David E. Williams & Co., Phila., Pa.

DALLIBA COAL CO.
General Office, Blairsville, Pa.
Dalliba Mine, Drift, Up. Freeport Seam, 5 ft. 3 in. thick.
PO—Leechburg, Pa. SP—Bagdad, Pa.; CTY—Westmoreland; RR—P.R.R., Conemaugh Div.
PR—R. D. Grey.....Blairsville, Pa.
TR—R. B. Smith, " "
GM—R. B. Smith, " "
CE—Albert Smith .....Saltsburg, Pa.
MS—L. E. Walheim, ...Leechburg, Pa.
SCO—Bagdad Supply Co., Buyer, F. C. Prugh, Leechburg, Pa.
S of H—2 Elec. loco. and mules; track gauge 40 in.
S of M—4 Elec. and 3 Comp. air mach. and hand.
PP—2 Boilers, 1 gen. unit, 250 volts D.C., 1 compressor and 1 pump.
EMP—120. Last fiscal year output 90,000 tons.

DAYTON COAL CO.
See Summit Coal Mining Co.

DELMONT GAS COAL CO.
General Office, Park Bldg., Pittsburgh, Pa.
Drift Mine; Pittsburgh Seam, 78 to 84 in. thick.
PO Delmont, Pa.; CTY—Westmoreland; RR—P. R. R., Turtle Creek Branch.
PR—E. M. Gross, ...Pittsburgh, Pa.
TR—Jas. H. Gallagher, " "
GM—Jas. H. Gallagher, " "
PA—Jas. H. Gallagher, " "
GS—M. R. Morris. ....Delmont, Pa.

DENTS RUN MINING CO.
Dents Run No. 1 Mine, Drift, Lower Kittanning Seam.
PO—Dents Run, Pa. SP—Same. CTY—Elk. RR—P. R. R.
GM—F.B.Williams & Co. Buffalo,N.Y.
PA—F. B. Williams & Co. " "
MS—T. Y. Evans.....Dents Run, Pa.
EM—Henry Williams ....Oak Ridge, Pa.
S of H—Mules.
S of M—Hand and 6 comp. air mach.
PP—1 return tubular boiler, total 150 H. P., 1 air comp., 1 pump.

DERBY BRANCH COAL COMPANY.
Colorado Nos. 1 and 2, Drifts; Moshannon and "E" Seams; 3 ft. 6 in. thick.
PO—Philipsburg, Pa.; SP—Same; CTY—Center. RR—P. R. R., Derby Br.
PR—H. B. Scott.....Philipsburg, Pa.
TR—H. B. Scott, " "
GM—Simeon Hartshorn, " "
GS—Simeon Hartshorn, " "
PA—Simeon Hartshorn, " "
S of H—Mules, track gauge 36 in.
Sales Agent, H. B. Scott & Co., Philipsburg, Pa.

DERINGER BROS.
Woodland Colliery No. 2, Drift, "D" Seam, 4 to 4 ft. 8 in. thick.
PO—Spangler, Pa.; SP—Garman, Pa.; CTY—Cambria; RR—P. R. R., Susquehanna Branch.
GM—W. Deringer .....Spangler, Pa.
GS—W. Deringer, " "
PA—W. Deringer, " "
MS—H. L. Rogers.....Barnesboro, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 Gasoline pump.
EMP—40. Last fiscal year output 26,000 tons.

DEXTER & CARPENTER, Inc.
Gen. Office, 12 Broadway, New York, N.Y.
PR—Geo. M. Dexter, New York, N.Y.
GM—Geo. M. Dexter, " " "
PA—Geo. M. Dexter, " " "
TR—Wm. Carpenter, " " "
Sec'y—Ralph Neilson, " " "
GS—Jos. J. McCann.....Lloydell, Pa.
CE—Andrew B. Crighton, Johnstown, Pa.
SCO—Ashville Supply Co., Ashville, Pa.
Sales Agent, Dexter & Carpenter, Inc., No. 12 Broadway, New York, N. Y.

Claire Mine; Drift; "E" Seam, 42 in. thick.
PO—Ashville, Pa.; SP—Same; CTY—Cambria; RR—P. R. R., C. & I. Br.
S of H—Mules and rope.
S of M—Hand.

Leland Nos. 1 and 10 Mines, Drift, Moshannon Seam, 28-32 in. thick.
PO—Beccarria, Pa.; SP—Smoke Run, Pa.; CTY—Cambria; RR—P.R.R., Moshannon Branch.
MS—Ed. Casker .....Beccarria, Pa.
S of H—Gasoline motor and mules; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular boiler.
EMP—90. Last fiscal year output 70,000 tons.

Lloydell No. 1 Mine, Drift, "B" Seam, 3½ ft. thick.
PO—Lloydell, Pa.; SP—Same; CTY—Cambria; RR—P.R.R., South Fork Branch.
MS—Lewis Johnson .....Lloydell, Pa.
S of H—Tail rope; track gauge 36 in.
S of M—Hand.
EMP—42. Last fiscal year output 30,000 tons.

DIAMOND COAL & COKE CO., THE
Gen. Office, 1108 House Bldg., Pgh., Pa.
PR—P. M. Pfeil.....Pittsburgh, Pa.
TR—A. H. Sotolzenbach, " "
GM—A. R. Budd, " "
GS—A. R. Budd, " "
PA—A. J. Soisson, " "
CE—Geo. S. Baton & Co., " "
SCO—West Brownsville Supply Co., Buyer S. A. Barnum.
Sales Agent, C. M. Budd, Pittsburgh, Pa.

Diamond Mine, Slope, Pgh. Seam, 7 to 8 ft. thick.
PO West Brownsville, Pa.; SP Same; CTY—Washington; RR—P. R. R., Mon. Div.
MS—S. V. Hartman, W.Brownsville Pa.
S of H—3 Elec. loco. and mules; track gauge 44 in.
S of M—7 Elec. machines.
PP 6 Return tubular boilers, total 900 H.P., 2 gen. units, 250 volts D.C., 2 pumps.
Days worked, 165. Last fiscal year output277,300 tons.

Huston Run Mine, Drift, Pgh Seam, 5 to 6 ft. thick.
PO—Courtney, Pa.; SP—Same; CTY—Washington; RR—P.R.R., Mon. Div.
MS—G. G. Gillingham...Courtney, Pa.
SM—J. Jackman, " "
S of H—Mules and 3 elec. loco.; track gauge 44 in.
S of M—6 Elec. machines.
PP—3 Return tubular boilers, total 450 H. P., 2 pumps, 3 gen. units.
Days worked, 223. Last fiscal year output 399,776 tons.

DILLTOWN SMOKELESS COAL CO.
Dilltown No. 1 Mine; Drift; "B" Seam, 44 to 52 in. thick.
PO—Dilltown, Pa.; SP—Same; CTY—Indiana; RR—P. R. R., B. R. & P., Cresson and Blacklick Br.
PR—Dr.T.R.Williams, Punxsut'w'y, Pa.
TR—S. S. Henderson, Brookville, Pa.
GM—E. E. Hewitt, ...Dilltown, Pa.
GS—E. E. Hewitt, " "
PA—E. E. Hewitt, " "
EM—E. E. Hewitt, " "
CE—C. M. Means.....Pittsburgh, Pa.
S of H—1 Elec. loco.; track 42 in. gauge.
S of M—2 Elec. mach.
PP—Power purchased.
EMP—40.

DIXON COAL CO.
Dixon Mine.
PO—Idamar, Pa.; CTY—Indiana.
GS—C. E. Sharpless.....Cresson, Pa.
No report.

DIXONVILLE COAL CO.
General Office, Johnstown, Pa.
Randolph No. 2 Mine, Drift, "D" Seam, 3 to 4 ft. thick.
PO—Dixonville, Pa.; SP—Same; CTY—Indiana. RR—P. R. R., Cresson and Cherry Tree Br.
PR—W. J. Kuntz.....Johnstown, Pa.
TR—Geo. T. Robinson, " "
GM—James Waddell.....Dixonville, Pa.
PA—James Waddell, " "
MS—James Waddell, " "
EM—S. E. Dickey.....Johnstown, Pa.
S of H—Mules, track gauge 3 ft.
S of M—Hand.
EMP—50. Last fiscal year output 37,000 tons.
Sales agent, W. J. Kuntz, Johnstown Pa.

DOLLIE COAL MINING CO., (THE) ...
Dollie and Davis Mines, Drifts, Moshannon or "D" Seam (Two openings on same hill, worked together, using same tipple).
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R., Tyrone & Clearfield.
PR—James R. Somerville..Wigton, Pa.
TR—S. Blain Stine..Osceola Mills, Pa.
PA—S. Blain Stine, " " "
MS—J. Taylor .....Osceola Mills Pa.
S of H—Mules.
S of M—Hand.
Sales Agents, B. Nicoll & Co., New York, N.Y.

Note—Peerless No. 4 Mine leased to Banner Coal Mining Co.

DOMINION COAL CO.
General Office, Pittsburg, Pa.
PR—R. C. Masten.....Pittsburg, Pa.
TR—R. C. Masten, " "
CE—John M. Rayburn, " "
GM—R. C. McLean....Logansport, Pa.
GS—R. C. McLean, " "
PA—R. C. McLean, " "
Sales Agency, Producers Supply Co.; Sales Mgr., John Robinson, Pittsburg, Pa.

Drift Mine; Up. Freeport Seam, 42 in. thick.
PO—Cowanshannock, Pa.; SP—Same; CTY—Armstrong; RR—P. R. R., B. & A. V. Div.
MS—R. C. McLean....Logansport, Pa.
S of H—1 Elec. loco.
S of M—3 Elec. mach.
PP—Power purchased, 2 pumps.
Last fiscal year output, 52,000 tons.

Drift Mine; Pgh. Seam, 72 in. thick.
PO—Houston, Pa.; SP—McConnell's Mills, Pa.; CTY Washington; RR—P. R. R., Wash. Br.
MS—Daniel Foster.....Canonsburg, Pa.
S of H—Rope.
S of M—Comp. air mach.

DONOHOE COKE CO.
General Office, Greensburg, Pa.
Donohoe Mine; Slope; Pittsburgh Seam, 84 in. thick.
PO—Greenwald, Pa. SP—Same. CTY—Westmoreland; RR—P. R. R., New Alexandria Br.
PA—J. J. Joyce .....Greenwald, Pa.
MS—C. Rae King, " "
SCO—John P. Donohoe & Co., Ltd. Buyer, J. J. Joyce, Greenwald, Pa.
S of H—3 Elec. loco.; track gauge 44 in.
S of M—Hand.
PP—4 boilers, total 600 H. P., gen. unit 250 volts D. C., 1 compressor and 3 pumps.
EMP—205. Coke ovens, 193. Last fiscal year output 205,019 tons.

DORNON COAL CO.
Mine abandoned.

DUNBAR COAL MINING CO.
General Office, Altoona, Pa.
Fairmount Mine, Drift, Moshannon Seam, 4 ft. 2 in. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield; RR—P.R.R.
GM—B. F. MacCartney....Altoona, Pa.
PA—B. F. MacCartney, " "
MS—Joseph Dugan, Osceola Mills, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—24.

DUNBAR FURNACE CO.
Now American Manganese Mfg. Co.

DUNCAN-SPANGLER COAL CO.
General Office, 305 Finance Bldg., Philadelphia, Pa.
PR—Jos. H. Reilly.....Phila., Pa.
GM—Jos. H. Reilly, " "
TR—Jos. B. Campbell
PA—John E. Reilly.....Spangler, Pa.
GS—John E. Reilly, " "
EM—C. S. Schlicher, " "
EE—Jos. Clark, " "
SCO—C. R. Jones & Co., Buyer C. R. Jones, Spangler, Pa.
Sales Agent, Jos. H. Reilly Phila., Pa.

Delta Mine; Drift; "D" Seam, 46-54 in. thick.
PO—Spangler, Pa.; SP—Barnesboro, Pa.; CTY—Cambria; RR—P.R.R., Walnut Run Br. of C.&C. Div.
MS—Wm. H. Young....Barnesboro, Pa.
S of H—Mules and rope, track gauge 36 in.
S of M—12 Comp. air mach.
PP—2 Erie return tubular boilers total 160 H. P., 3 steam engines, 1 comp. and 4 pumps.
EMP—100. Last fiscal year output 78,673 tons.

Blubaker Mine No. 13, Drift, "D" Seam, 40-44 in. thick.
PO—Spangler, Pa.; SP—Same; CTY—Cambria; RR—P. R. R., C.&C. Div.
MS—James Logan.....Spangler, Pa.
S of H—2 Elec. loco., track gauge 36 in.
S of M—2 Elec. mach. and hand.
PP—3 Erie return tubular boilers, total 260 H. P., 2 steam engines. 1 pump.
EMP—63. Last fiscal year output 31,883 tons.

DUNHAM, F. J. & CO.
Royal No. 2 Mine, Drift, "B" Seam, 3½ to 4 ft. 2 in. thick.
PO—Philipsburg, Pa. SP—Same. CTY—Centre. RR—N. Y. C.
GM—George Stott.....Philipsburg, Pa.
PA—George Stott, " "
MS—John T. Harvey, " "
S of H—Mules.
S of M—Hand.

DUNKIRK GAS COAL CO.
General Office, Fulton Building, Pittsburgh, Pa.
PR—H. A. Kuhn .....Pittsburgh, Pa.
CE—H. A. Kuhn, " "
TR—H. A. Andrews, " "
GM—H. K. Knopf, " "
PA—H. K. Knopf, " "
EM—H. K. Knopf, " "
SCO—Miners Supply Co. Buyer, W. S. McElhose, Pittsburgh, Pa.
Sales agents, H. A. Andrews and T. S. Bailie, Pittsburgh, Pa.

Acme No. 1 Mine, Shaft, Pgh. Seam, 6 ft. thick.
PO—Bentleyville, Pa. SP—Same. CTY—Washington. RR—P. V. & C., Ellsworth Branch.
MS—Thos. H. Tudor ....Weaver, Pa.
SM—J. A. Kensinger, " "
S of H—Elec. loco. and mules. Track gauge 44 in.
S of M—15 elec. mach.
PP—5 return tubular boilers, total 750 H. P., 5 gen. units and 2 pumps.
EMP—398. Last fiscal year output 321,680 tons.

Dunkirk Mine, Slope, Pgh. Seam, 6 ft. thick.

Continued on Next Page.

PO—Monongahela City, Pa., R. F. D. SP—Frye, Pa. CTY—Washington. RR—P. V. & C. Ellsworth Br.
MS—Jas. L. Maize, RFD, Monongahela City, Pa.
SM—J. P. Taylor RFD, Monongahela City, Pa.
S of H—3 elec. locos., mules and rope.
S of M—9 elec. mach.
PP—3 return tubular boilers, total 450 H. P., 2 gen. units and 2 pumps.
EMP—259. Last fiscal year output 225,888 tons.

DUNNE COAL & COKE CO.
General Office, Germania Bank Bldg., Pittsburg, Pa.
Nelson's Bridge Mine; Drift; Brookville Seam, 38 to 56 in. thick.
PO—Branchton, Pa.; SP—Nelsons Bridge, Pa.; CTY—Butler; RR—B. & L. E.
PR—R. O. Dunne.....Pittsburg, Pa.
TR—John Wilfred Ely, " "
PA—John Wilfred Ely, " "
GM—W. J. Koerner....Branchton, Pa.
MS—W. J. Koerner, " "
EM—W. J. Koerner, " "
MM—Thomas J. Simpson, " "
SCO—Ely Supply Co., " "
S of H—Mules.
S of M—3 Elec. mach.
PP—Boiler, 250 H. P., 3 elec. pumps.
EMP—32. Output to be 300 tons monthly.
Sales Agent, R. O. Dunne, Pittsburg, Pa.

DUQUESNE COAL & COKE CO.
General Office, Pittsburgh, Pa.
Aurora Mine, Drift, Pgh. Seam.
PO—Avella, Pa. SP—Same. CTY—Washington. RR—Wabash & Pgh. Terminal.
PR—Geo. W. Theiss....Pittsburgh, Pa.
TR—Geo. W. Theiss, " "
GM—A. G. Leonard.....Pittsburgh, Pa.
PA—A. G. Leonard, " "
GS—A. G. Leonard, " "
EM—Andrews & Southard, " "
CE—Andrews & Southard, " "
MS—Chris Neicer.....Avella, Pa.
MM—Earnest Nonnassi, " "
EE—John Burniski, " "
S of H—Elec. motors.
S of M—Elec. machines.
PP—2 boilers, 1 gen. unit, 250 volts D. C. Commenced to ship coal Sept. 1st, 1914.

DUSHAN COAL CO.
Dushan Mine.
PO—Osceola Mills, Pa. CTY—Center. State report.

DYE R J & CO.
Out of business.

EAGLE COAL CO.
General Office, Buffalo, N. Y.
PR—H. K. Wick.....Buffalo, N. Y.
GM—W. D. Ward.....Buffalo, N. Y.
GS—H. H. Moody.....Fredell, Pa.
PA—H. H. Moody.....Fredell, Pa.
EM—H. E. Robinson, " "
EE—Wm. Weeter, " "
SCO—Fredell Supply Co., Buyer, A. L. Pritner.
Eagles Nos. 4 and 5 Mines; Drift; Up. Kittanning Seam, 3 to 4½ ft. thick.
PO—Fredell, Pa., SP—Upper Hillville, Pa.; CTY—Clarion; RR—P.R.R. B. & A. V. Div.
S of H—Mules and rope.
S of M—7 Comp. air mach and hand.
PP—2 Titusville, return tubular boilers, total 230 H. P., 2 compressors.
EMP—125. Last fiscal year output 71,088 tons.

Glenora Mine; Drift; Lower Kittanning Seam, 41 in. thick.
PO—Catfish, Pa.; SP—Catfish Run, Pa; CTY—Clarion; RR—Penna., B. & A. V. Div.
S of H—1 Elec. loco.; track gauge 29 in.
S of M—3 Elec. mach.
PP—1 Erie return tubular boiler, 1 gen. unit, 280 volts D. C., 2 pumps.
EMP—150.

EAGLE VALLEY COAL CO.
Drift Mine; Upper Freeport Seam, 48 in. thick.
PO—Brookville, Pa.; SP—Ringgold, Pa.; CTY—Jefferson; RR—P. S. & N.
PR—H. J. Hutchison, Brookville, Pa.
GS—H. J. Hutchison, " "
TR—F. L. Verstine, " "
GM—F. L. Verstine, " "
PA—F. L. Verstine, " "
EM—Frank Arthurs, " "
MS—R. W. Hunter, ...Ringgold, Pa.
S of H—Mules.
S of M—7 Comp. air mach.
PP—2 Water tube boilers, 1 compressor, 2 pumps.
EMP—99.
Sales Agent, N. N. Ray, Brookville, Pa.

EASTERN BITUMINOUS COAL MINING BONDS.
General Office, Altoona, Pa.
Dean Nos. 8 and 10; Slope and Drift; "E" and "C" Prime, 3 to 6ft. thick; washery, not operated.
PO—Frugality, Pa.; SP—Same; CTY—Cambria.
RR—P.R.R., C & I. Div.
GM—F. P. McFarland..Altoona, Pa.
CE—J. S. Sillyman & Co., " "
GS—H. L. Binnix....Frugality, Pa.
PA—H. L. Binnix, " "
PA—H. L. Binnix, " "
MM—C. L. Troxell, " "
EE—C. L. Troxell, " "
SCO—Frugality Merchandise Co., Buyer F. P. McFarland, Frugality, Pa.
SM—F. P. McFarland....Frugality, Pa.
S of H—5 Elec. loco., rope and mules track gauge 36 in.
S of M—10 comp. air mach. hand;
PP—4 Return tubular, Erie boilers, total 285 H. P., 3 return tubular, Phoenix boilers, total 450 H. P., 2 gen. units 250 volts D. C., 1 compressor.
EMP—300. Coke ovens, 99. Last fiscal year output, 85,000 tons.
Dean No. 9 not operated.
Sales agent, F. P. McFarland, Altoona, Pa.

EASTON COAL CO.
Howard Mine; Drift; Seam, 43 in. thick.
PO—Mahaffey, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
GM—A. D. Lydic, " "
GS—A. D. Lydic, " "
MS—Wm. Gensler, " "
S of H—Mules.
S of M—Hand.

EBENSBURG COAL CO.
General Office, Philadelphia, Pa.
Ebensburg No. 1 Mine, Drift, "B" Seam 38 to 48 in. thick.
PO—Colver, Pa. SP—Same. CTY—Cambria. RR—P. R. R.
PR—J. H. Weaver...Philadelphia, Pa.
TR—J. E. Wilkinson, " "
PA—J. E. Wilkinson, " "
VP—E. F. Saxman....Philadelphia, Pa.
GM—E. F. Saxman, " "
MS—P. M. Saxman.....Colver, Pa.
EM—D. G. Mahaffey.....Colver, Pa.
MM—R. C. Roll, " "
EE—R. C. Roll, " "
SCO—Colver Store Co. Buyer, H. R Griest, Colver, Pa.
S of H—13 elec. locos.
S of M—42 elec. punchers, 18 elec. chain machs.
PP—4 Sterling, water tube boilers, total 1,480 H. P., 3 gen. units, 2,300 volts A. C., 3 phase, 60 cycles, 250 volts D. C., 8 pumps.
EMP—900. Last fiscal year output 800,000 tons.

ECHARD COAL & COKE CO
General Office, Connellsville, Pa.
Murphy Mine Drift. Pgh. Seam 8-9 ft. thick.
PO—Star Junction, Pa.; SP—Same; CTY—Fayette.
RR—P. & L. E.
PR—W. W. Smith...Connellsville, Pa.
TR—J. T. Johnston.Star Junction, Pa.
SM—Johnston Supply Co,. Star Junction, Pa.
S of H—Mules and engine; Track gauge 42 in.
S of M—Hand.
EMP—55: Coke ovens 60 Bee Hive.
Last fiscal year output 55000 tons.

EDRI COAL CO.
Mine exhausted.

EGOLF COAL MINING CO.
PO—R. F. D. Reitz, Pa.; CTY—Somerset.
No report.

EICHELBERGER, E. & SON.
General Office, Saxton, Pa.
Bacon Nos. 1 and 2 Mines, Drifts, Barnett Seam.
PO—Six Mile Run, Pa. SP—Coaldale, Pa. CTY—Bedford. RR—H. & B. T.
GM—J. A. Eichelberger....Saxton, Pa.
PA—J. A. Eichelberger, " "
SM—J. A. Eichelberger, " "
MS—Wm. E. Williams.Six Mile Run,Pa.
S of H—Mules and gravity.
S of M—Hand.
EMP—100.

ELECTRIC COAL CO.
Electric Nos. 7 & 8 Mines; Drift and Slope; "D" and "C" Seams; 30 in. to 78 in. thick.
PO—Glen Campbell, Pa.; SP—Same; CTY—Indiana. RR—N.Y.C.
PR—J. B. Irish, West End Trust Bldg., Phila., Pa.
TR—S. L. Clark, 1014 Commonwealth Bldg., Phila., Pa.
GS—J. H. Miller....Glen Campbell, Pa.
PA—J. H. Miller, " "
MS—Joe Trowp, " "
SM—W. S. Martz, " "
S of H—Rope. Track gauge 3 ft.
S of M—Hand and 1 Elec. mach.
PP—2 Return tubular boilers, 2 gen. units; 1 pump; also purchase power.
EMP—60. Last fiscal year output 25,111 tons.
Sales agent, Clark Bros. Coal Mng. Co and Irish Bros.

ELK LICK COAL CO.
Name changed to Beachly Coal Co.

ELLSWORTH COLLIERIES CO.
General Office, Buffalo, N. Y.
PR—E. A. S. Clarke 2 Rector St., New York, N. Y.
TR—J. P. Higginson.Lackawanna, N.Y.
VP—C. H. McCullough, Jr., " "
GM—C. H. McCullough, Jr., " "
PA—F. H. Burnett, " "
EM—W. A. James, "
GS—W. A. Luce, Farmers Bank Bldg., Pittsburgh, Pa.
SCO—Wehrum Supply Co. Buyer, John W. Hugus, Ellsworth, Pa.

No. 1 Mine, Shaft, Pgh. or River Seam, 5 ft. 10 in. thick. Operate washery.
PO—Ellsworth, Pa. SP—Same. CTY—Washington. RR—P. R. R., Monongahela Div.
MS—W. E. Lahm .....Ellsworth, Pa.
S of H—25 elec. locos. Track gauge 42 in.
S of M—Hand and 18 elec. machines.
PP—6 Sterling water tube boilers, total 2,400 H. P., 4 gen. units, 3 D. C., 230 volts D. C. and 1 A. C., 60 cycles, 1 pump.
EMP—347. Last fiscal year output 414,000 tons. Coke ovens, 205, Bee Hive.

No. 2 Mine, Shaft, Pgh. or River Seam, 5 ft. 10 in. thick.
PO—Ellsworth, Pa. SP—Same. CTY—Washington. RR—P. R. R., Monongahela Div.
MS—W. E. Lahm, .. Ellsworth, Pa.
S of H—21 elec. locos. Track gauge 3½ ft.
S of M—Hand and 17 elec. machines.
PP—11 Erie City and other return tubular boilers, total 1,375 H. P., 2 gen. units, 2,300 volts A. C., 60 cycles, 2 pumps.
EMP—398. Last fiscal year output 412,000 tons.

Nos. 3 and 4 Mines, Shaft, Pgh. or River Seam, 5 ft. 10 in. thick. Operate 2 washeries.
PO—Ellsworth, Pa. SP—Same. CTY—Washington. RR—P. R. R., Monongahela Div. "
MS—W. E. Lahm.....Ellsworth, Pa.
SM—Frank Kocher.....Cokeburg, Pa.
S of H—20 elec. locos. Track gauge 42 in.
S of M—Hand and 17 elec. machines.
PP—(3) 4 Stirling and (4) 8 Stirling water tube boilers, total 2,600 H. P., 2 gen. units. 250 volts D. C.
EMP—359. Last fiscal year output 374,000 tons. Coke ovens, 285. Bee Hive.

ELLSWORTH-DUNHAM COAL CO.
General Office, St. Benedict, Pa.
Victor Nos. 11 and 14. Drift and Slope, Lower Freeport Seam.
PO—Arcadia, Pa. SP—Same. CTY—Indiana. RR—N. Y. C.
GS—R. H. George.....Windburne, Pa.
S of H—4 elec. locos.
S of M—36 elec. machines.
PP—5 return tubular boilers, total 750 H. P., 2 150 K. W. gen. units, 250 volts D. C., 1 pump.
EMP—155. Last fiscal year output 149,703 tons. ?

EMPIRE COAL MINING CO.
General Office, 418 Stephen Girard Bldg., Philadlphia, Pa.
PR—Wm. A. Webb..Philadelphia, Pa.
TR—G.Webb Shillingford, Clearfield, Pa.
GM—G.Webb Shillingford, " "
PA G. Webb Shillingford, Clearfield, Pa.
EM—Chas. E. Schlichter....Spangler, Pa.
EM—Thomas Pealer.....Indiana, Pa.

Empire "A", Drift, Moshannon Seam, 4½ to 5 thick.
PO—Barnesboro, Pa., SP—Same, CTY—Cambria. RR—N. Y. C.
MS— Wm. R. Leadbetter, Barnesboro, Pa.
S of H—Mules and 3 Elec. loco. Track gauge 36 inches.
S of M—Hand and 20 Comp. air mach.
PP—5 Return Tubular Erie and Keeler boilers, total 460 H. P., 2 Gen. units, 250 volts D. C. 2 Air Compressors.
EMP—173. Last fiscal year output 118,536 tons.

Empire "M" Mine; Drift; Miller Seam, 36 in. thick.
PO—Clymer, Pa., SP—Same, CTY—Indiana.
RR—N. Y. C.
MS—James St. Clair....Clymer, Pa.
S of H—Mules and 2 elec. loco. Track gauge 36 in.
S of M—22 Comp. air mach.
PP—4 Keeler return tubular boilers, total 550 H. P., 1 gen. unit 250 volts D. C., 2 compressors.
EMP—196. Last fiscal year output 116,411 tons.

Empire "B", Drift, Miller Seam, 3 to 4 ft. thick.
PO—Clymer, Pa., SP—Same, CTY—Indiana.
RR—N. Y. C.
MS—Amiel Clemenson.....Clymer, Pa.
S of H—Mules, and 1 elec. loco. Track gauge 36 in.
S of M—Hand.
EMP—72. Last fiscal year output 35,-651 tons.
Sales Agents, Empire Coal Mng. Co., Philadelphia, Pa.

EMPORIUM IRON CO.
General Office, Emporium, Pa.
Round Top Mine, Drift, Freeport Seam.
PO—Canoe Run, Pa. SP—Same. CTY—Cameron. RR—P. R. R.
GM—C. J. Goodenough..Emporium, Pa.
PA—C. J. Goodenough, " "
MS—C. J. Goodnough, " "
SM—Furnace Supply Co. Buyer, F. L. Webster, Canoe Run, Pa.
S of H—Mules.
S of M—Hand and 1 loco.
EMP—100.

ENTERPRISE COAL CO.
Ponfeigh Mine, Drift; "C" Prime Seam 3 ft. 9 in. to 4 1-2 ft. thick.
PO—Garrett, Pa.; SP—Same; CTY—Somerset.
RR—B. & O., Beriin Branch.
PR—W. A. Merrill.....Garrett, Pa.
PA—W. A. Merrill, " "
TR—W A. Merrill, " "
GM—J. B. Walker, " "
GS—J. B Walker, " "
EM—J. T. Titney, " "
MM—Edward Johnson, " "
EE—James Fletcher " "
SCO—Enterprise Supply Co., Buyer W. A Merrill.
S of H—3 Elec. loco., 40 in. track gauge.
S of M—1 Elec. mach. and hand.
PP—3 Return tubular, Erie City, boilers, total 330 H. P., 1 gen. unit 250 volts D. C.
EMP—92. Last fiscal year output 99,-000 tons.

ERIE COAL & COKE CO.
Keystone Nos. 1 and 2 Mines; Drifts; B Seam, 44 to 54 in. thick.
PO—Ferris, Pa.; SP—Same; CTY—Butler; RR—B. & L. E.
TR—C. E. Deal.....Meyersdale, Pa.
GM—Levi Deal.....Ferris, Pa.
PA—Levi Deal, " "
MS—Levi Deal, " "
SCO—Bessemer Merc. Co., Buyer, Henry F. Prant, Ferris, Pa.
S of H—3 Elec. loco.
S of M—Hand and 2 Elec. and 4 Comp. air mach.
PP—5 Return tubular boilers, total 610 H. P., 1 gen. unit 250 volts D. C., 1 compressor and 2 pumps.
EMP—225. Last fiscal year output 100,000 tons.

ESTEP BROS. COAL MNG. CO.
Now Springfield Coal Mining Co.

ETNA-CONNELLSVILLE COKE CO.
General Office, Connellsville, Pa.
Garwood Mine; Shaft and slope; Pgh. Seam 8-9 ft. thick.
PO—R. D. No. 20 Brownsville, Pa. SP—Simpson, Pa.; CTY—Fayette.
—P. R. R., Monon. Br.
PR—Cyrus Echard ...Connellsville, Pa.
TR—J. L. Fritsch, " "
GM—Geo. W. Campbell, " "
PA—Geo. W. Campbell, " "
CE—Geo. W. Campbell, " "
MS—C. L. Patterson..Brownsville, Pa.
SCO—Dunlap Supply Co Buyer, Geo. W. Campbell, Connellsville, Pa.
S of H—Mules. Track gauge 42 in.
S of M—10 Comp. air mach. and hand.
PP—2 Return tubular boilers total 250 H. P. 1 compressor and 1 pump.
EMP—119; Coke ovens, 119 Bee Hive.
Last fiscal year output 72000 tons.

EUCLID COAL & COKE CO.
Euclid Mine; Slope; Kittanning Seam, 34 to 48 in. thick.
PO—Euclid, Pa.; SP Same; CTY—Butler; RR—B. & L. E., Main Line.
PR—Thos. W. Keighley..Uniontown, Pa.
TR—Chas. Keighley, " "
June 25, 1915, new company slope sunk within 20 ft. of coal.

EVANS COAL & COKE CO.
General Office, Connellsville, Pa.
Evans Nos. 1, 2 and 3 Mines; Slopes; Up. Freeport Seam, 72 in. thick.
PO—Uniontown, Pa.; SP—Evans Station Pa.; CTY—Fayette; RR—B. & O., P. R. R.
PR—A. C. Stickel....Connellsville, Pa.
GM—A. C. Stickel, " "
PA—A. C. Stickel, " "
TR—M. A. McKevitt, " "
GS—O. M. McClain....Uniontown, "
EM—E. C. Baker Co., " "
MS—Thos. Davis, " "
CE—W. V. Whiteman.....Listie, Pa.
MM—Perry McClain.....Dunbar, Pa.
EE—Perry McClain, " "
SCO—Evans Supply Co.; Buyer, Chas. Buttermore, R. F. D. No. 1, Uniontown, Pa.
S of H—Rope and mules; track gauge, 36 and 42 in.
S of M—6 Elec. mach. and hand.
PP—Power purchased, 6 pumps.
EMP—250. Last fiscal year output, 200,000 tons

EXPORT COAL CO.
General Office, Pittsburg, Pa.
Spring Hill Mine; Drift and Incline, Seam 66 to 72 in. thick.
PO—Trafford, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
PR—James S. Pates.....Irwin, Pa.
GM—James S. Pates, " "
GS—James S. Pates, " "
EM—ames S. Pates, " "
TR—F. G. Lamb.....Pittsburg, Pa.
MS—J. J. McAlister....Trafford, Pa.
S of H—1 Elec. loco.
S of M—2 Elec. mach.
PP—Power purchased.
EMP—150.
New mine.

FAIRFIELD COAL & COKE CO.
PO—Bolivar, Pa.; CTY—Westmoreland.
No report.

FAIRMOUNT COAL CO.
General Office 306 Ellicott Sq., Buffalo, N. Y.
Nos. 6,8 and 9 Mines; Drift. L. and up. Freeport and Kittanning; Seams; 4 to 6 ft. thick.
PO—New Bethehem, Pa.; SP—Same and Oak Ridge, Pa.; CTY—Armstrong.
RR—P. R. R., Oak Ridge & Bostonia Branch.
PR—A. E. Hedstrom....Buffalo, N.Y.
TR—E. C. Roberts, " "
GM—E. C. Roberts, " "
GS—E. C. Roberts, Jr., New Bethlehem, Pa.
PA—E. C. Roberts, Jr., New Bethlehem, Pa.
MS—E. C. Roberts, Jr., New Bethlehem, Pa.
SCO—Fairmount Store Co., Inc., Buyer George Imhof, New Bethehem, Pa.
S of H—Rope and mules. Track gauge standard.
S of M—Comp. air elec. mach. and hand.
PP—6 Boilers, gen. units 500 volts D. C.
EMP—600.
Last fiscal year output 135,000 tons.

FAIRVIEW MINING CO.
General Office, Wabash Bldg., Pittsburg, Pa.
VP—W. G. Rogers.....Pittsburg, Pa.
GM—W. G. Rogers, " "
NOTE—Mine eqipped and will start operating when business conditions are better, June 25, 1915.

FALL BROOK COAL CO.
General Office, Corning, N. Y.
"Anna S" Mine, Drift, Blossburg Seam, 4 to 3 ft. thick.
PO—Antrim, Pa., SP—Same, CTY—Tioga.
RR—N Y C & H R R.
PR—John Magee.....Corning, N. Y.
TR—John H. Lang, " "
GM—William Howell.....Antrim, Pa.
PA—W. J. Howell, " "
MS—James Pollock, " "
S of H—Mules and rope; track guage 24 in.
S of M—Hand; 18 Comp. air machines.
PP—5 Return tubular boilers, total 500 H. P., 3 compressors and 3 pumps.
EMP—350. Last fiscal year output 154,281 tons.

FALLEN TIMBER COAL CO.
Colonial Mine No. 1; Drift; E or Up. Freeport Seam, 26 to 38 in. thick.
PO—Fallen Timber, Pa.; SP—Same; CTY—Cambria; RR—P. R. R., C. & I. Branch.
PR—W. H. Beers, Fallen Timber, Pa.
GM—W. H. Beers....Fallen Timber, Pa.
TR—B. F. Beers, " " "
GS—Chas. Lamb, " " "
PA—Chas. Lamb, " " "
MS—Geo. Lamb, " " "
EM—Andrew B. Creighton, Johnstown, Pa.
SCO—Fallen Timber Supply Co., Fallen Timber, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—76. Last fiscal year output, 51,272 tons.
Sales Agency, J. Tatnall Lea Co., Philadelphia, Pa.

FALLS CREEK COAL CO.
General Office, Lock Haven, Pa.
Hopkins Mine; Drift; L. Freeport Seam, 5 ft. thick.
PO—Du Bois, Pa.; SP—Same and Falls Creek, Pa.; CTY—Clearfield; RR—P. R. R., B.R. &P.
PR—Wm. P. Hopkins..Lock Haven, Pa.
TR—I. A. Shaffer, Jr., " "
GM—I. A. Shaffer, Jr., " "
PA—W. M. Campbell, Prudential Bldg., Buffalo, N. Y.
MS—J. R. Axelson.....Du Bois, Pa.
EM—V. R. Pratt....Reynoldsville, Pa.
S of H—Rope.
S of M—13 comp. air mach.
PP—2 Erie Water tube boilers, total 300 H. P., 1 comp.
EMP—105. Last fiscal year output 50,000 tons.
Sales Agent, W. B. Nicol, Prudential Bldg., Buffalo, N. Y.

FANCY HILL COAL WORKS.
Eagle Mine Drift; Pittsburgh Seam, 102 in. thick.
PO—Cheat Haven, Pa. SP—Same; CTY—Fayette; RR—B. & O., F. M. & P. Div.
TR—A. Howell.....Cheat Haven, Pa.
GM—A. Howell, " "
PA—A. Howell, " "
GS—John Moore, " "
EM—Harry B. Gans....Uniontown, Pa.
S of H—Mules.
S of M—Hand.
PP—1 pump. Power purchased.
EMP—150. Last fiscal year output 150,000 tons.

FAYETTE COAL CO. (THE)
General Office, Pittsburgh, Pa.
Chalfant Mine, Drift; Pgh. Vein 5ft. thick.
PO—Noblestown, Pa.; SP—Same; CTY—Allegheny.
RR—P. C. C. & St. L.
PR—Henry Chalfant....Pittsburgh, Pa.
TR—D. B. McClelland, " "
GM—A. M. Bell, " "
PA—A. M. Bell, " "
CE—John M. Rayburn, " "
GS—J. E. Kennedy...Noblestown, Pa.
MM—Jos. Venaleck, " "
EE—Joo. Venaleck, " "
SCO—Noblestown Supply Co., Buyer Desire Thomassy, Noblestown, Pa.
S of H—4 Elec.. loco. and mules; track guage 42 in.
S of M—6 Elec. and 18 Comp. air mach. and hand.
PP—5 Return tubular boilers total 750 H. P., 2 air compressors, 2 gen. units 250 volts D. C.
EMP—352.
Sales Agent A. M. Bell, Pittsburgh, Pa.

FAYETTE COKE CO.
Shamrock Mine, Slope, Pittsburgh Seam, 9 ft. thick.
PO—New Salem, Pa., SP—Same, CTY—Fayette. RR—P. R. R.
PR—G. P. Fitzgerald..New Salem, Pa.
TR—C. E. Lenhart, " "
GM—C. E. Lenhart, " "
GS—Geo. H. Reynolds, " "
MM—J. J. Maza, " "
SCO Shamrock Supply Co., " "
Buyer, Robert McBurney, " "
EM—Fayette Engineering Co., Uniontown, Pa.
S of H—Rope, horses and 2 elec. loco., Track gauge 40 in.
S of M—Hand.
PP—5 Return tubular boilers, Erie, total 480 H. P., 3 pumps. Also Buy Power.
EMP—211.
Last fiscal year output 115,770 tons.
260 Bee Hive coke ovens.
Sales Agents, Producers Coke Co., Uniontown, Pa.

FEDERAL COAL CO.
See Penn-Quemahoning Coal Co.

FERNWOOD COAL CO.
Mt. Vernon No. 10 Mine, Drift, "D" Seam.
PO—Curwensville, Pa.; SP—Fernwood, Pa. CTY—Clearfield; RR—P. S. & N.
PA—M. J. Kelly.....Curwensville, Pa.
MS—John R. Farrel, " "
S of H—Mules.
S of M—Hand.
EMP—30.

FICART RUN COAL CO.
Fricks Mine Drift; "B" and "C" Seam, 36 to 72 in. thick.
PO—Blandburg, Pa.; SP—Figart, Pa., CTY—Cambria. RR—P. R. R. Stroud Branch.
TR—R. L. Bower.....Blandburg, Pa.
GM—R. L. Bower, " "
PA—R. L. Bower, " "
GS—W. C. McCartney, " "
SM—R. L. Bower, " "
EM—A. Smith, " "
S of H—Mules.
S of M—Hand.
PP—1 pump.
EMP—30. Last fiscal year output 9,000 tons.

FORD COLLIERIES CO.
PR—J. B. Ford.....Detroit, Mich.
TR—E. L. Ford, " "
GM-VP—J. A. Curtis, " "
GS—A. R. Pollock...Curtisville, Pa.
PA—A. R. Pollock, " "
EM—G. G. Long, " "
EE—Richard Shaw, " "
SCO—Wyandotte Supply Co.
Buyer, Geo. F. Martin, Curtisville, Pa.
Sales Agent, J. A. Curtis, V. P. & G. M., Detroit, Mich.

Benjamin Mine; Shaft; Freeport Seam, 60 to 84 in. thick.
PO—Curtisville, Pa., SP—Same CTY—Allegheny. RR—Bessemer & L.E.
MS—Wm. D. Thomas....Curtisville, Pa.
S of H—9 Elec. loco.; track gauge 42 inches.
S of M—7 Elec. mach.
PP—6 Return tubular boilers, total 1200 H. P., 2 Gen. units 250 volts, D. C. 1 pump.
EMP—413. Last fiscal year output 497,628 tons.

Francis Mine; Shaft; Freeport Seam, 60 to 84 in. thick.
PO—Curtisville, Pa., SP—Same, CTY—Allegheny. RR—Bessemer & L.E.
MS—Wm. D. Thomas....Curtisville, Pa.
S of H—7 Elec. loco.; track gauge 42 in.
S of M—6 Elec. machines.
PP—4 return tubular boilers, total 800 H. P., 2 Gen. units, 250 volts, D. C.
EMP—353. Last fiscal year output 446,382 tons.

Berry Mine; Shaft; Freeport Seam, 60 to 84 in. thick.
PO—Curtisville, Pa.; SP—Bairford, Pa.; CTY—Allegheny; RR—B. & L. E.
MS—W. H. Thomas....Curtisville, Pa.
S of H—1 Elec. loco.
S of M—2 Elec. mach.
PP—4 Return tubular boilers, 800 H. P., 2 gen. units 250 volts D. C., 1 pump.
EMP—19.

FORGE COAL MINING CO.
General Office, Franklin Bldg., Philadelphia, Pa.
GM—A. M. Riddell .....Portage, Pa.
PA—A. Y. Stevenson.Philadelphia, Pa.
EM—A. B. Crichton ..Johnstown, Pa.
Sales Agent, David E. Williams & Co., Philadelphia, Pa.

Forge No. 1 Mine, Slope, C. Prime Seam.
PO—Portage, Pa. SP—Same. CTY—Cambria. RR—P. R. R.
MS—On. Fahey.....Portage, Pa.
S of H—4 elec. locos.
S of M—15 comp. air mach.
PP—3 return tubular boilers, total 525 H. P., 2 air comp., 2 pumps.
EMP—144. Last fiscal year output 151,957 tons.

Puritan Mine, Shaft, Miller Seam.
PO—Puritan, Pa. SP—Same. CTY—Cambria. RR—P. R. R.
MS—Robert Quigley.....Puritan, Pa.
SCO—Excelsior Store Co. SB—Penn Griest, Puritan, Pa.
S of H—1 elec. loco.
S of M—7 comp. air machines.
PP—Power purchased.
EMP—80. Last fiscal year output 54,464 tons.

FORT LIGONIER COAL CO.
Mine worked out.

FRANCIS COAL CO.
General Office, East Palestine, Ohio.
Duff's Mine, Drift; No. 6 Seam, 46 in. thick.
PO—Cannelton Pa. SP—Same. CTY Beaver. RR—P. S. & N.
TR—M. B. Francis,.. East Palestine, O.
PA—M. B. Francis, " " "
GM—Thos. G. Francis, " " "
MS—Thos. G. Francis, " " "
EE—A. Gishbaucher....Cannelton, Pa.
S of H—Mules. Track gauge 38 in.
S of M—2 Electric Machines.
PP—2 Return tubular boilers, total 230 H. P. 1 generating unit, 250 volts, D. C.
EMP—45. Last fiscal year output, 34,000 tons.

FRANKLIN COKE CO.
General Office, Mt. Pleasant, Pa.
Leon Mine; Drift; Connellsville Coking Seam, 8 ft. thick.
PO—Smock, R. F. D., Pa.; SP—Same; CTY—Fayette; RR—P. V. & C., Redstone Branch.
PR—James S. Braddock, Mt. Pleasant, Pa.
GM—James S. Braddock, " "
GS—H. C. Braddock, " "
PA—H. C. Braddock, " "
TR—Dr. G. B. Roberts, Vanderbilt, Pa.
MS—Chas. A. Wilson, ...Smock, Pa.
EM—Dunn & Gans. .....Uniontown, Pa.
S of H—Mules and 1 Steam loco.; track gauge 42 in.
S of M—Hand.
EMP—30. 30 Bee Hive coke ovens.

FRAZER, WM.
Frazer Mine, Drift; B Seam; 5 ft. thick.
PO—Laquin, Pa.; SP—Same; CTY—Bradford; RR—S. & N. Y.
RR—S. & N. Y.
GS—J. H. Frazer, ... Laquin, Pa.
MS—C. F. Lyon, " "
CE—C. F. Lyon, " "
MM—E. K. West.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
EMP—26. Last fiscal year output 13,000 tons.

FREDERICKTOWN COAL CO.
Fredericktown Mine; Drift; Pittsburgh Seam, 72 to 96 in. thick.
PO—Fredericktown, Pa.; SP—Same; CTY—Washington; RR—P. R. R., P. M. & S. Branch.
PR—Jas. A. Hawkins, Fredericktown, Pa.
TR—W. W. Hawkins, " "
GM—J. A. Baxendell, " "
PA—J. A. Baxendell, " "
MS—Chas. Butler, " "
EM—L. A. Moslener, Brownsville, Pa.
S of H—Mules and rope.
S of M—2 Elec. mach.
PP—Gen. unit 250 volts D.C. Power purchased.
EMP—60. Output 65,000 tons.
Sales Agency, Moreland Coke Co., Pittsburgh, Pa.

FRICK, H. C., COKE CO.
General Office, Carnegie Bldg., Pittsburgh, Pa.
PR—W. H. Clingerman,..Pittsburgh, Pa.
TR—Philip Keller, " "
Secy—D. H. Coble, " "
PA—T. S. Duncan, " "
Auditor—C. P. Parker, " "
GS—Clay F. Lynch.....Scottdale, Pa.
GS—Asst, W. H. Glasgow, " "
CE—J. P. K. Miller, " "
CE—Asst., T. W. Dawson, " "
Mech. Engr.—G. E. Huttenmaier, Scottdale, Pa.
EE—A. T. Bull, " "
SCO—Union Supply Co., Buyer, C. L. Steiner, Frick Bldg., Pittsburgh, Pa., Genl. Supt. of Stores, John Lynch, Uniontown, Pa.

Adelaide Mine, Shaft.
PO—Adelaide, Pa. SP—Same. CTY—Fayette. RR—P. & L. E.
MS—W. B. Barnhart....Adelaide, Pa.
S of H—1 steam loco. and mules.
S of M—Hand.
PP—6 return tubular boilers, total 525 H. P.
EMP—219.

Alverton Nos. 1, 2 and 3 Mines, Slopes and Drift.
PO—Alverton, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R., Stonerville Branch.
MS—S. B. Marton.....Alverton, Pa.
S of H—2 steam loco. and mules.
S of M—Hand.
PP—4 Cylindrical and 1 return tubular boilers, total 240 H. P.
EMP—247.

Continued on Next Page.

Baggaley Mine, Slope, Pgh. Seam, 7 to 7½ ft. thick.
PO—Baggaley, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R., Unity Branch.
MS—Jos. Malia .....Baggaley, Pa.
S of H—2 comp. air and 2 steam locos.
S of M—3 comp. air mach.
PP—12 return tubular boilers, total 1,670 H. P., 4 comp. and 4 pumps.
EMP—409.

Bitner Mine, Drift.
PO—Dunbar, Pa., R. F. D. No. 2. SP—Bitner Coke Works, Pa. CTY—Fayette. RR—P. R. R., Monon. Div.
MS—J. A. Childs.....Dunbar, Pa.
S of H—2 elec. locos.
S of M—Hand.
PP—2 return tubular boilers, total 300 H. P.
EMP—360.

Bridgeport Mine, Shaft.
PO—Brownsville, Pa. SP—Same. CTY—Fayette. RR—P. R. R., Monon. Div., P. & L. E.
MS—W. C. Hood ....Brownsville, Pa.

Brinkerton Mine, Drift.
PO—Greensburg, Pa., R. F. D. No. 7. SP—Brinkerton, Pa. CTY—Westmoreland. RR—P. R. R.
MS—J. H. Bitz .....Greensburg, Pa.
S of H—1 steam loco. and mules.
S of M—Hand.
PP—5 return tubular boilers, total 280 H. P. and 1 comp.
EMP—166...

Buckeye Mine, Slope.
PO—Stauffer, Pa. SP—Buckeye, Pa. CTY—Westmoreland. RR—P. R. R., B. & O.
MS—J. Q. Finch.....Stauffer, Pa.
S of H—2 steam loco. and mules.
S of M—Hand.
PP—6 Cylindrical and 5 return tubular boilers, total 900 H. P., 6 pumps.
EMP—135.

Buffington Mine, Shaft, Pgh. Seam, 90 to 112 in. thick.
PO—New Salem, Pa.; SP—Same; CTY—Fayette; RR—P. R. R. Monon. Div.
MS—Jas. Hart.....New Salem, Pa.
S of H—Mules.
S of M—6 Comp. air mach.
PP—8 Return tubular boilers, total 1200 H. P., 1 comp., 2 pumps.
EMP—424.

Calumet Mine; Shaft.
PO—Calumet, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Monon. Div.
MS—Robt. Ramsey.....Calumet, Pa.
S of H—3 Comp. air and 1 steam locos.
S of M—Hand.
PP—8 Return tubular boilers, total 1060 H. P. and 7 pumps.
EMP—260.

Central Mine; Slope.
PO—Tarr, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R.
MS—H. G. Brown.....Tarr, Pa.
S of H—1 Steam loco and mules.
S of M—Hand.
PP—10 Return tubular boilers, total 1090 H. P. and 1 comp.
EMP—272. Last fiscal year output 288,254 tons.

Chambers Mine; Drift.
PO—Greensburg, Pa.; R. F. D. No. 5; SP—Margeurite, Pa.; CTY—Westmoreland; RR—P. R. R.
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers total 120 H. P. and 1 pump.

Coal Brook Mine; Slope.
PO—Connellsville, Pa., R.F.D. No. 35; SP— Ruth, Pa.; CTY—Fayette; RR—P. R. R.
MS—R. C. Beerbower..Connellsville, Pa
PP—2 Return tubular boilers, total 150 H. P.
EMP—93.

Collier Mine; Shaft, Pgh. Seam 7 to 7½ ft.
PO—Unionown, Pa., R. F. D., No. 3. SP—Collier, Pa.; CTY—Fayette; RR—P.R.R., B.& O., S.& M.Br.
MS—C. H. Pittman.....Uniontown, Pa.
S of H—4 Comp. and 2 steam loco.
S of M—6 Comp. air mach.
PP—3 Return tubular boilers, total 750 H. P., 4 comp. and 2 pumps.
EMP—302.

Colonial No. 1 Mine; Slope; Pgh. Seam, 7 to 7½ ft. thick.
PO—Smock, Pa.; SP—Same; CTY—Fayette; RR—P.R.R., Monon Div.
MS—B. J. Murphy.....Smock, Pa.
S of H—2 Elec. loco.
S of M—11 Elec. mach.
PP—4 Return tubular boilers total 600 H. P. and 4 pumps.
EMP—339.

Colonial No. 3 Mine; Shaft; Pgh. Seam, 7 to 7½ ft. thick.
PO—Grindstone, Pa., R.F.D. No. 23; SP—Rowes Run, Pa.; CTY—Fayette; RR—P.R.R., Monon. Div.
MS—W. C. Hood.....Grindstone, Pa.
S of M—10 Comp. air mach.
PP—3 Return tubular boilers, total 1500 H. P., 2 comp. and 1 pump.
EMP—233.

Colonial No. 4 Mine; Shaft; Pgh. Seam, 7 to 7½ ft. thick.
PO—Grindstone, Pa.; SP—Same; CTY—Fayette; RR—P.R.R., Monon. Div.
MS—W. C. Hood.....Grindstone, Pa.
S of H—2 Elec. loco.
S of M—11 Elec. mach.
PP—5 Return tubular boilers, total 570 H. P. and 2 pumps.
EMP—205. Last fiscal year output 251,164 tons.

Continental No. 1 Mine Shaft.
PO—Uniontown, Pa.; SP—Continental Works No. 1; Pa.; CTY—Fayette; RR—P.R.R., B. & O.
MS—W. C. Mullan....Uniontown, Pa.
PP—9 Return tubular boilers, total 1,240 H.P., 2 comp. and 2 pumps
EMP—340.

Continental No. 2 Mine; Shaft; Pgh Seam, 92 to 108 in. thick.
PO—Uniontown, Pa., R.F.D. No. 3; SP—Walnut Hill, Pa.; CTY—Fayette; RR— P. R. R., B. & O.
MS—S. W. Brown....Uniontown, Pa.
S of H—3 Comp. air and 1 steam loco.
S of M—8 Comp. air mach.
PP—7 Return tubular boilers, total 490 H. P. and 1 pump.
EMP—279.

Continental No. 3 Mine; Shaft.
PO—Newcomer, Pa.; SP—Same; CTY—Fayette; RR—P.R.R., B. & O.
MS—E. F. Speer.....Newcomer, Pa.
S of H—1 Steam loco.
PP—5 Return tubular boilers, 400 H. P.
EMP—253.
274,952 tons.

Crossland Mine; Slope.
PO—Uniontown, Pa.; R.F.D. No. 2; SP—Same; CTY—Fayette; RR—P. R.R., B. & O.
MS—C. W. Evans....Uniontown, Pa.
PP—2 Return tubular boilers, total 300 H. P., 1 comp.

Davidson Mine; Shaft.
PO—Connellsville, Pa.; SP—Davidson, Pa.; CTY—Fayette; RR—P.R.R., B. & O.
MS—R. C. Beerbower.Connellsville, Pa.
S of H—3 Steam loco.
PP—7 Return tubular boilers, total 1120 H. P., 2 comp. and 7 pumps.
EMP—313.

Dearth Mine; Drift; Pgh. Seam; 7 to 10 ft. thick.
PO—Uniontown, Pa., R.F.D. No. 4; SP—Low Phos, Pa.; RR—P.R.R., Monon. Div.
MS—J. M. Shields..Uniontown, Pa.
S of M—Comp. air and elec. loco.
EMP—250.

Dorothy Mine; Shaft; Pgh. Seam, 7 to 7½ ft. thick.
PO—Latrobe, Pa.; SP—Dorothy Coke Works, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—A. F. Downing.....Latrobe, Pa.
S of H—1 Steam loco.
S of M—8 Comp. air loco.
PP—6 Return tubular boilers, total 1050 H. P., 2 comp. and 2 pumps.
EMP—220.

Edenborn Mine; Shaft; Pgh. Seam, 79 to 87 in. thick.
PO—Edenborn, Pa.; SP—Same; CTY—Fayette; RR—P. R. R., Monon. Div.
MS—J. F. McCracken..Edenborn, Pa.
S of H—2 Steam loco.
S of M—10 comp. air mach.
PP—12 Return tubular boilers, total 1850 H. P., 3 comp. and 1 pump.
EMP—534.

Enterprise Mine; Drift.
PO—Alverton, Pa.; SP—Enterprise Coke Works, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—S. B. Marton.....Alverton, Pa.

Filbert Mine.
PO—New Salem, Pa., R.F.D. No. 18; SP—Fairbank, Pa. CTY—Fayette, RR—P.R.R. Monon. Div.
MS—H. N. Boyd.....New Salem, Pa.
S of H—Mules.
S of M—Hand.
EMP—150.

Footedale Mine, Drift and Slope, Pgh. Seam; 7 to 9 ft. thick.
PO—Uniontown, Pa., R. F. D., No. 4; SP—Same; CTY—Fayette; RR—P. R. R., Monon. Div.
MS—R. S. Skemp....New Salem, Pa.
S of H—3 Elec. loco.
S of M—4 Elec. and 1 comp. air mach.
PP—5 Return tubular boilers, total 750 H. P., 2 comp. and 2 pumps.
EMP—317.

Gates Mine; Shafts; Pgh. Seam; 88 to 108 in. thick.
PO—Adah, Pa. SP—Gates, Pa.; CTY—Fayette; RR—P. R. R., Monon. Div.
MS—H. N. Boyd.....Adah, Pa.
S of M—12 Comp. air mach.
PP—12 Return tubular boilers, total 1870 H. P., 4 comp. and 2 pumps.
EMP—253.

Hecla Nos. 1 and 3 Mines; Shafts.
PO—Smith West, Pa.; SP—Hecla, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—A. H. Pollins....South West, Pa.
S of H—1 Steam loco. (at No. 3).
PP—14 Return tubular boilers, total 2820 H. P., 3 compressors and 9 pumps.
EMP—514.

Hecla No. 2 Mine; Shaft.
PO—Trauger, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—Robert Ramsay.....Trauger, Pa.
S of H—1 steam loco.
PP—8 Return tubular boilers, total 1100 H. P., 2 comp. and 5 pumps.
EMP—281.

Hopwood Mine.
PO—Uniontown, Pa.; SP—Hopwood, Pa.; CTY—Fayette; RR—B. & O.

Juniata Mine, Shaft.
PO—Dunbar, Pa., R.F.D. No. 32; SP—Juniata, Pa.; CTY—Fayette; RR—B. & O., and O. & B. Short Line Branch.
MS—J. A. Childs.....Dunbar, Pa.
S of H—1 Steam loco.
PP—6 Return tubular boilers, total 650 H. P., and 3 pumps.
EMP—247.

Kyle Mine, Drift; Pgh. Seam, 6 to 9 ft. thick.
PO—Fairchance, Pa.; SP—Same; CTY—Fayette; RR—P. R. R.
MS—E. B. Beerbower..Fairchance, Pa.
S of H—4 Elec. loco.
S of M—2 Elec. mach.
EMP—285.

Lambert Mine; Shaft; Pgh. Seam, 88 to 198 in. thick.
PO—Lamberton, Pa. SP—Same CTY—Fayette; RR—P.R.R., Monon. Div.
MS—H. N. Boyd,....Lamberton, Pa.
S of H—3 Comp. air loco.
S of M—7 Comp. air mach.
PP—6 Return tubular boilers, total 1500 H. P., 3 comp. and 1 pump.
EMP—411.

Leckrone Mines; Drift and Slope; Pgh. Seam.
PO—Leckrone, Pa.; SP—Same; CTY—Fayette. RR—P.R.R., Monon., B. & O.
MS—J. A. Ramsay .... Leckrone, Pa.
S of H—9 elec. loco.
S of M—7 Elec. mach.
PP—6 Return tubular boilers, total 900 H. P.
EMP—341.

Leisenring No. 1 Mine; Shaft.
PO—Leisenring, Pa.; SP—Same; CTY—Fayette; RR—P.R.R., B. & O.
MS—C. B. Franks....Leisenring, Pa.
S of H—4 Comp. air and 1 steam loco.
PP—12 Return tubular boilers, total 1400 H. P., 3 comp. and 4 pumps
EMP—418.

Leisenring No. 2 Mine Shaft.
PO—West Leisenring, Pa.; SP—Bute, Pa.; CTY—Fayette; RR—P.R.R.
MS—R. K. Warnock, West Leisenring, Pa.
S of H—2 Steam loco.
PP—3 Cylindrical and 4 return tubular boilers, total 935 H. P., 1 comp. and 2 pumps.
EMP—518.

Leisenring No. 3 Mine, Shaft.
PO—Dunbar, Pa., R.F.D. No. 32; SP—Monarch, Pa.; CTY—Fayette; RR—P. R. R.
MS—R. V. Rex.....Dunbar, Pa.
S of H—4 Comp. air and 2 steam loco.
PP—7 Boilers, total 1650 H. P., 3 comp. and 2 pumps.
EMP—467.

Leith Mines; Shaft.
PO—Uniontown, Pa.; SP—Leith, Pa.; CTY—Fayette RR—P.R.R., B.& O.
MS—P. J. Locke.....Uniontown, Pa.
S of H—Steam loco.
PP—11 Return tubular boilers, total 1600 H. P., 2 comp. and 9 pumps.
EMP—291.

Lemont Nos. 1 and 2 Mines; Slope.
PO—Lemont Furnace, Pa., SP—Lemont Ovens and Durent, Pa.; CTY—Fayette; RR— B. & O., P.R.R.
MS—T. L. Doorley, Lemont Furnace, Pa.
S of H—2 Elec. and 1 steam loco.
S of M—Comp. air mach and hand.
PP—24 Return tubular boilers, total 12,560 H. P., 2 comp. and 4 pumps.
EMP—634.

Mammoth Mine; Shaft.
PO—Mammoth, Pa., SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—F. K. Drill ..Mammoth, Pa.
S of H—2 Comp. air and 1 steam loco.
S of M—Comp. air mach and hand.
PP—10 Return tubular boilers, total 1480 H. P., 3 comp. and 7 pumps.
EMP—400.

Marguerite Mine; Slope; Pgh. Seam, 84 to 102 in. thick.
PO—Greensburg, Pa., R.F.D. No. 5 SP—Margeurite, Pa.; CTY—Westmoreland; RR—P.R.R.
MS—E. S. Wolfersburg, Greensburg, Pa.
S of H—1 Steam loco.
S of M—10 Comp. air mach.
PP—8 Return tubular boilers, total 1850 H. P., 3 comp. and 3 pumps.
EMP—340.

Monastery Mine, Slope.
PO—Latrobe, Pa.; SP—Monastery Coke Works, Pa.; CTY—Westmoreland; RR—P. R. R.
PP—3 Return tubular boilers, total 400 H. P., and 2 pumps.

Mutual Mine; Slope.
PO—United, Pa.; SP—Mutual, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—Robert Ramsey.....United, Pa.
S of H—1 Steam loco.
PP—4 Return tubular boilers, total 320 H. P., 1 comp. and 2 pumps.
EMP—126.

Oliphant Mine; Slope.
PO—Oliphant Furnace, Pa.; SP—Same; CTY—Fayette; RR—P.R.R.
MS—T.W.English, Oliphant Furnace,Pa.
S of M—Comp. air mach. and hand.
PP—4 Return tubular boilers, total 600 H. P. and 2 comp.
EMP—262.

Painter Mine, Drift.
PO—Scottdale, Pa.; SP—McClure, Pa.; CTY—Fayette; RR—B. & O.
MS—James Lynch.....Scottdale, Pa.
PP—2 Return tubular boilers, total 200 H. P.
EMP—53.

Phillips Mine; Shaft; Pgh. Seam, 8 to 9 ft. thick.
PO—Uniontown, Pa., R.F.D. No. 1; SP—Phillips Mine, Pa.; CTY—Fayette; RR—P.R.R., Monon. Div.
MS—W. J. Culleton..Uniontown, Pa.
S of H—3 Comp. air loco.
S of M—14 comp. air mach.
PP—4 Return tubular boilers, total 1200 H. P., 3 comp. and 1 pump.
EMP—314.

Ralph Mine, Shaft.
PO—McClellandtown, Pa., R.F.D. No. 17; SP—Ralph, Pa.; CTY—Fayette; RR—P.R.R. Monon. Div.

Redstone Mine; Shaft and Slope.
PO—Brownfield, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
MS—Herbert Boyd.....Brownfield, Pa.
S of H—2 Comp. air and 1 steam loco.
PP—8 Return tubular boilers, total 240 H. P., 1 comp. and 4 pumps.
EMP—414.

Rist Mine; Slope.
PO—Broad Ford, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
MS—James Lynch.....Broad Ford, Pa.
S of H—1 Steam loco and mules.
PP—4 Cylindrical boilers, total 140 H. P.
EMP—101.

Ronco Mine; Shaft; Pgh. Seam, 7½ to 8 ft. thick.
PO—Ronco, Pa.; SP—Same; CTY—Fayette; RR—P. R. R. Monon. Div.
MS—C. F. McCracklin.....Ronco, Pa.
S of H—4 Comp. air loco.
S of M—11 Comp. air mach.
PP—7 Return tubular boilers total 2100 H. P., 5 comp. and 2 pumps.
EMP—268.

Continued on Next Page.

FRICK, H. C., COKE CO.—Continued.

Sarah Mine.
PO—East Millsboro, Pa., R.F.D. No. 21; SP—Sarah, Pa.; CTY—Fayette; RR—P.R.R., Monon. Div., P. & L. E.

Shoaf Mine, Drift, Pgh. Seam, 90 to 114 in. thick
PO—Smithfield, Pa., R.F.D. No. 7; SP—Shoaf, Pa.; CTY—B. & O., S. & M. Br., P. R. R.
MS—Frank Emory.....Smithfield, Pa.
S of H—3 Elec. loco.
EMP—449.

South West No. 1 Mine; Shaft.
PO—Mt. Pleasant, Pa.; SP—Morewood Coke Works, Pa.; CTY—Westmoreland; RR—P.R.R.
MS—J. A. Cowan..Mt. Pleasant, Pa.
S of H—4 Steam loco. and mules.
PP—17 Return tubular boilers, total 2050 H. P., 3 comp. and 7 pumps.
EMP—439.

South West No. 2 Mine; Slope.
PO—Mt. Pleasant, Pa.; SP—Alice Mines, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—J. Q. Finch.....Mt. Pleasant, Pa.
PP—5 Return tubular boilers, total 450 H. P., and 4 pumps.
EMP—112. Last fiscal year output 121,145 tons.

South West Nos. 3and 4 Mines; Slipes.
PO—Tarr, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—Burgess B. Boyd.....Tarr, Pa.
PP—6 Cylindrical and 2 return tubular boilers, total 520 H. P., 3 pumps.
EMP—196.

Standard Mine; Shaft.
PO—Mt. Pleasant, Pa.; SP—Standard, Pa.; CTY—Westmoreland; RR—B. & O.
MS—J. S. Mack.....Mt. Pleasant, Pa.
S of H—5 Steam loco. and mules.
PP—17 Boilers, total 2915 H. P., 3 comp. and 10 pumps.
EMP—882.

Trotter Mine, Shaft.
PO—Connellsville, Pa.; SP—Trotter, Pa.; CTY—P.R.R., B. & O.
MS—Benton Boyd....Connellsville, Pa.
S of H—3 Comp. air loco.
PP—7 Return tubular boilers, total 1400 H. P., 3 comp. and 5 pumps.
EMP—396.

United Mine; Shaft.
PO—United, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—Robert Ramsay.....United, Pa.
S of H—2 Comp. air and 1 steam loco.
PP—1 Cylindrical and 8 return tubular boilers, total 1230 H. P., 3 comp. and 5 pumps.
EMP—340.

White Mine; Drift.
PO—Broad Ford, Pa.; SP—Sherrick, Pa. CTY—Fayette. RR—B. & O
MS—James Lynch:.....Scottdale, Pa.
PP—1 Return tubular boiler, total H. P.
EMP—107.

Wynn Mine.
PO—Fairchance, Pa.; SP—Wynn Works, Pa.; CTY—Fayette; RR—P.R.R.
MS—T. W. English....Fairchance, Pa.
EMP—260.

York Run Mine; Drift and Slope; Pgh. Seam, 6 to 7½ ft. thick.
PO—Uniontown, Pa., R. F. D., No. 3. SP—York Run, Pa.; CTY—P.R.R.
MS—E. B. Beerbower, R. F. D. No. 3, Uniontown, Pa.
S of H—5 Elec. loco.
PP—6 Return tubular boilers, 1800 H. P., 2 comp. and 4 pumps.
EMP—429.

Youghiogheny Mine.
PO—Sutterville, Pa.; SP—Douglass Station, Pa.; CTY—Allegheny; RR—P. & L. E.
MS—L. E. Osborne....Sutterville, Pa.

Youngstown Mine; Slope.
PO—Lemont Furnace, Pa. SP—Stambaugh, Pa.; CTY—Fayette; RR—P. R. R., B. & O.
MS—R. H. Barry..Lemont Furnace, Pa.
S of H—1 Steam loco. and mules.
S of M—Comp. air mach and hand.
PP—8 Return tubular boilers, total 1000 H. P., 3 comp. and 2 pumps.
EMP—226.
Note—Chambers, Crossland, Hopwood, Monastery, Painter, Ralph and Sarah Mines not operating. Valley and Sterling Mines abandoned.

GALLAGHER, W. R. & BRO.
Black Oak Mine, Drift, Miller Seam.
PO—Smith Mill, Pa.; CTY—Clearfield. RR—P. R. R.
MS—John Gallagher...Smith Mill, Pa.
S of H—Mules.
S of M—Hand.
EMP—45. Last fiscal year output 40,000 tons.

GARRETT COAL CO.
South Side Mine; Slope; "D" Seam, 44 in. thick.
PO—Garrett, Pa.; SP—Same; CTY—Somerset; RR—B. & O.
PR—Wm. G. Hocking, ...Garrett, Pa.
TR—Wm. G. Hocking, " "
GM—Allen Hocking, " "
CS—Wm. T. Hocking, " "
S of H—Rope.
S of M—Hand.
Output 300 tons daily.

GATEHOUSE & SHEFF COAL CO.
Port No. 1 Mine, Drift; B Seam 3 1-2 to 4 1-2 ft. thick.
PO—Madera, Pa.; SP—Same; CTY—Clearfield.
RR—N.Y.C.& H.R.; Clearfield & Southern Branch.
PR—J. C. Gatehouse....Madera, Pa.
GM—J. C. Gatehouse, " "
PA—J. C. Gatehouse, " "
MS—J. C. Gatehouse, " "
EM—P. E. Womelsdorff.
S of H—Mules; Track Gauge 3 ft.
EMP—53; Last fiscal year output 25,000 tons.

GENUINE CONNELLSVILLE COKE CO.
Park Hill Mine, Drift; Connellsville Seam; 8 to 10 ft. thick.
PO—Waltersburg, Pa.; SP—Same; CTY—Fayette. RR—P. R. R. & P. V. & C.
PR—I. W. Sherman....Uniontown, Pa.
TR—John E. Hess, " "
GM—M. F. Pickard..Connellsville, Pa.
GS—M. E. Pickard, " "
PA—M. F. Pickard, " "
MS—J. C. Krepps....Waltersburg, Pa.
S of H—1 Steam loco., tsack gauge 44 in.
S of M—Hand.
EMP—56. Coke ovens—58 Bee Hive. Last fiscal year output 42,642 tons.

GHEM COAL CO.
Ghem Mine; Drift Mine; "B" Seam 5ft 6 in. to 5ft. thick.
PO—Osceola Mills, Pa., SP—Same; CTY—Clearfield. RR—P. R. R.; Tyrone & Clearfield Div.
PR—G. M. H. Good, Osceola Mills, Pa.
TR—Chas. R. Houtz, Osceola Mills, Pa.
EM—Womelsdorf & Duncle, Philipsburg, Pa.
S of H—Mules; track gauge 3 ft.
S of M—Hand.

GILLESPIE COAL CO.
Drift Mine; Pittsburgh or River Bank Seam, 84 in. thick.
PO—Fayette City, Pa.; SP—Same; CTY—Fayette; RR—P. & L. E.
PR—Wm. H. Renstrom. Fayette City, Pa.
CS—Wm. H. Penstum, " "
TR—Guy W. Brown.
GM—F. O. Dewar, " "
MS—F. O. Dewar, " "
PA—F. O. Dewar, " "
S of H—Mules.
S of M—Hand.
NOTE—Just commenced development.

GILMORE COKE OVENS.
General Office, Uniontown, Pa.
TR—R. V. Austin....Uniontown, Pa.
GM—G. B. Gilmore, " "
SCO—Swaney & Gilmore, Buyer, G.B. Gilmore, Uniontown, Pa.

Plumer Mine; Slope; Connellsville Seam 7 ft. thick
PO—Leckrone, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
MS—Ed Ebberly.....Leckrone, Pa.
S of H—Rope; mules, track gauge 42 in.
EMP—150. Coke ovens, 72 Bee Hive.

Gilmore Mine; Drift; Connellsville Seam; 7 ft. thick.
PO—Smiley, Pa.; SP—Smiley, Pa.; CTY—Fayette. RR—B. & O.
MS—E. Sweeney.....Smiley, Pa.
S of H—1 Elec. loco, track gauge 42 in.
S of M—Hand
EMP—250. Coke ovens, 101 Bee Hive.

GILPIN COAL CO
Gilpin Mine, Drift.
PO—Leechburg, Pa.; SP—Same; CTY—Armstrong; RR—P. R. R.
GM—L. W. Hicks.....Leechburg, Pa.
MS—Wm. Gilson, " "
EM—E. A. Watters, " "
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, total 60 H. P., 1 pump.
Black Diamond and Henderson Mines; Drifts and Slopes; Moshannon and B Seams.
PO—Brisbin, Pa.; SP—Same. CTY—Clearfield; RR—P. R. R.
GM—W. A. Gould.....Brisbin, Pa.
PA—T. V. Gould, " "
MS—John Gould, " "
SM—T. V. Gould, " "
S of H—Rope and mules.
S of M—Comp. air mach.
PP—Boiler, 125 H. P.
EMP—150.

GRACE COAL MINING CO.
Grace No. 1 Mine; Drift, No. A Seam, 48 to 60 in. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
PR—S. B. Isenberg....Osceola Mills, Pa.
GM—S. B. Isenberg, " "
PA—S. B. Isenberg, " "
MS—S. B. Isenberg, " "
TR—Geo. Minns, " "
S of H—Rope and mules; track gauge 42 in.
S of M—Hand.
EMP—50.

GRACETON COKE CO.
Mines Nos. 2 and 3, Drifts, Upper Freeport Seam, 5 ft. thick.
PO—Graceton, Pa., SP—Same, CTY—Indiana. RR—Penna. R.R., Indiana Branch.
PR—E. L. Ford.....Youngstown, O.
TR—John Stambaugh, " "
GM—C. M. Lingle,....Graceton, Pa.
GS—C. M. Lingle.....Graceton, Pa.
PA—C. M. Lingle, " "
EM—M. F. Brandon, Homer City, Pa.
CE—W. O. White, Uniontown, Pa.
MM—J. N. Timmer....Graceton, Pa.
MS—W. H. Gates, " "
SCO—Graceton Supply Co., Buyer J. Latimer Curtain, Graceton, Pa.
S of H—Rope and mules; track gauge 42 in.
S of M—Hand; 38 comp. air machines.
PP—10 Return tubular Erie boilers, total H. P. 1200. 2 Gen. units, 250 volts A. C., 3 compressors, 2 pumps.
EMP—305. Last fiscal year output 210,619 tons.
Coke ovens, 202 Bee Hive.
Sales Agent, A. S. Fulmer, Graceton, Pa.

GRAFF COAL COMPANY.
General Office, Blairsville, Pa.
Graff Mine, Drift; Pittsburgh Seam; 5 ft. 9 in. to 7½ ft. thick.
PO—Blacklick, Pa.; SP—Same; CTY—Indiana. RR—P. R. R., Conemaugh Div., Indiana Branch
PR—W. P. Graff.....Blairsville, Pa.
TR—W. P. Graff, " "
GM—F. M. Graff, " "
PA—F. M. Graff, " "
MS—Earnest Fletcher....Saltsburg, Pa.
CE—Albert Smith.....Saltsburg, Pa.
S of H—Mules and 2 elec. loco., track gauge 42 in.
S of M—Hand.
PP—1 Erie City return tubular boilers total 150 H. P., 1 gen. unit, 100 K. W., 250 volts D. C.
EMP—75. Last fiscal year output 21,400 tons.
Sales Agent, Knickerbocker Fuel Co., New York, N. Y.

GRAMPIAN COAL MINING CO.
General Office, Clearfield, Pa.
Penn No. 4 and No. 5 Mines; Drifts; Miller Seam; 3½ ft. and 5 ft. thick.
PO—Osceola Mills, Pa.; CTY—Centre; RR—P. R. R., Tyrone Br.
GS—A. K. Wright....Clearfield, Pa.
S of H—Mule, rope and 3 Elec. loco.
S of M—Elec. mach.

GRASS FLAT COAL CO.
PO—Clearfield, Pa.
PR—H. A. Murray, Clearfield, Pa.
TR—J. P. O'Laughlin, " "

GRAZIER COAL MINING CO.
General Office, Johnstown, Pa.
Drift Mine; Cement and Miller Seams. 42 to 56 in. thick.
PO—Hollsopple, Pa.; SP—Foustwell, Pa. CTY—Somerset; RR—B. & O., S. & C. Br.
PR—J. A. Grazier.....Johnstown, Pa.
TR—J. C. Cosgrove, " "
GM—J. C. Crosgrove, " "
PA—J. C. Cosgrove, " "
EM—S. E. Dickey & Co., " "
EE—L. O. Greeg.....Windber, Pa.
MS—E. O. Cramer, R.F.D., Hollsopple, Pa.
SCO—Grazier Supply Co., " "
S of H—2 Elec loco., mules, rope and gravity; track gauge 36 in.
S of M—2 Elec. and 5 Comp. air mach.
PP—1 Return tubular boiler, 100 H. P., 1 gen. unit 250 volts D. C., 1 compressor, 3 pumps. Purchase power.
EMP—160. Last fiscal year output 90,000 tons.
Successors to Somerset and Cambria Coal Co.

EMP—61. Last fiscal year output 63,225 tons.

GLENDALE COAL CO.
Out of business.

GLEN WHITE COAL & LUMBER CO.
Glen White Nos. 1 and 2, Drifts, B. & E. Seam.
PO—Glen White, Pa.; SP—Kittanning Point, Pa.; CTY—Blair; RR—P. R. R.
PA—F. D. McNellis....Glen White, Pa.
GS—F. D. McNellis....Glen White, Pa.
MS—Wm. Benden, " "
SM—Gust Helsing, " "
S of H—Mules and rope, 2 Steam locos.
S of M—Hand and 4 comp. air mach.
PP—5 Boilers, total 300 H. P., 1 air comp.
EMP—181. Last fiscal year output 90,245 tons.
Coke Ovens, 96.

GLENWOOD COAL CO.
General Office, ... Philadelphia, Pa.
Glenwood Coal Co. Mine, Drift C. Prime Seam, 6 to 4½ ft. thick.
PO—Glen Campbell. SP—Glen Campbell, Pa. CTY—Indiana. RR—P. R. R.
PR—David E. Williams, " "
TR—William A. Smith, " "
PA—A. Y. Stevenson, " "
GM—A. M. Riddell, Altoona, Pa.
EM—A. B. Critchon,....Johnsown, Pa.

MS—Jas. Bowers, Glen Campbell, Pa.
S of H—1 Elec. loco. Track gauge 3 ft.
S of M—Hand.
PP—2 Erie return tubular boilers, total 300 H. P. 2 Gen. units, 250 volts D.C.
EMP—88. Last fiscal year output 90,890 tons.
Sales Agent, David E. Williams, Phila., Pa.

GOFF-KIRBY COAL CO., THE
General Office, Cleveland, O.
Bessemer and Cannel Mines, Drift.
PO—Deegan, Pa. CTY—Butler. RR—B. & L. E.
PR—I. C. Goff.....Cleveland, O.
TR—B. R. Taylor, " "
PA—B. R. Taylor, " "
MS—Jas. A. Gould.....Deegan, Pa.
S of H—Mules, rope, and elec loco.
S of M—Hand and elec. mach.

GOOD CLAY & COAL CO.
General Office, Patton, Pa.
Bloomington A 22 Mine; Drift; Moshannon Seam, 30 to 42 in. thick.
PO—Bells Landing, Pa.; SP—Bells, Pa.; CTY—Clearfield; RR—N. Y. C., D. & C. T. Br.
PR—Geo. S. Good, Jr.....Patton, Pa.
GM—Geo. E. Prindible, " "
GS—Geo. E. Prindible, " "
TR—Geo. E. Metzger..St. Benedict, Pa.
PA—Geo. E. Metzger, " " "
MS—B. R. Spackman, Bells Landing, Pa.
EM—E. W. Hess.....Clearfield, "
S of H—Mules.
S of M—Hand.
EMP—52. Last fiscal year output, 22,000 tons.
Sales Mgr., Geo. E. Metzger, St. Benedict, Pa.

GOODYEAR, E. J.
Goodyear No. 1 Mine; Drift; "B" Seam, 40 to 44 in. thick.
PO—Winburne, Pa.; SP—Same; CTY—Clearfield; RR—N. Y. C.
GM—E. J. Goodyear.....Munson, Pa
GS—E. J. Goodyear, " "
PA—E. J. Goodyear, " "
SM—W. E. Peterson, " "
EM—Harry Reese.....Kylertown, Pa.
S of H—Elec. loco.
S of M—Hand.
PP—Power purchased, 2 pumps.
EMP—62. Last fiscal year output, 42,445 tons.
Sales Agency, J. C. Mox & Co., Utica, N. Y.

GOSHEN COAL CO.
General Office, Clearfield, Pa.
Goshen Nos. 1 and 2; Drift; "E" and "D" Seam 5 to 3 ft. thick;
PO—Surveyor, Pa.; SP—Same; CTY—Clearfield. RR—N.Y.C.& H.R.
PR—Fred G. Betts....Clearfield, Pa.
GM—Fred G. Betts, " "
PA—Fred G. Betts, " "
TR—Alfred Graham, " "
CS—Thomas Langford...Surveyor, Pa.
SCO—Surveyor Supply Co., Buyer K. A. Miller, Surveyor, Pa.
S of H—1 Elec. loco.; track gauge 3 ft.
S of M—Hand.
PP—Power Purchased.
EMP—100. Last fiscal year output 100,000 tons.

GOULD, W. A. & BRO.
Midvale Nos. 1, 2, 3 and 4, Loraine,

GRASSY RUN COAL CO.
PR—J. Howard Meagher—Elk Lick, Pa.
TR—J. Howard Meagher, " "
GM—J. Howard Meagher, " "
GS—J. Howard Meagher, " "
PA—J. Howard Meagher, " "
SM—George James, " "
EM—B. J. Lynch.....Meyersdale, Pa.
MM—I. Weetinzer, " "

Grassy Run No. 1 Mine; Drift; Pgh. No 1 Seam, 56 in. thick.
PO—Elk Lick, Pa.; SP—West Salisbury, Pa.; CTY—Somerset;; RR—B. & O.
MS—Archie Cochrane....Elk Lick, Pa.
S of H—1 Steam loco.; track gauge, 42 in.
S of M—Hand.
EMP—70. Last fiscal year output. 58,033.03 tons.

Grassy Run No. 2 Mine; Drift; Pgh. Seam, 54 in. thick.
PO—Elk Lick, Pa.; SP—West Salisbury, Pa.; CYT—Somerset; RR—B. & O.
MS—P. M. Connor....Elk Lick, Pa.
S of H—Mules.
S of M—Hand.
Last fiscal year ouput, 28,553.02 tons.

Grassy Run No. 3 Mine; Drift; Pgh. Seam, 54 in. thick.
PO—Elk Lick, Pa.; SP—W. Salisbury, Pa.; CTY—Somerset; RR—B. & O.
MS—Jonathan Meager....Elk Lick, Pa.

GREAT LAKES COAL CO.
Succeeded by the North Penn Coal Co.

GREEK, JOHN M. & CO.,
See Dominion Coal Co.

GREENSBURG COAL CO.
Hawksworth Mine, Shaft, Pittsburgh Seam 7 ft. thick.
PO—Greensburg, Pa.; SP—Same. CTY—Westmoreland; RR—P.R.R.
PR—Alex. Coulter .....Greensburg, Pa.
TR—H. W. Coulter, " "
GS—Jos. D. Wentling, " "
PA—Stanley E. Cook, " "
EM—F. E. Maddocks, " "
MM—O. N. Johnson, " "
CE—Geo. S. Baton & Co., Pittsburgh, Pa
EE—Randolph-Means Co., " "
S of H—6 Elec. loco.; track gauge 40 in.
S of M—7 Elec. mach.
PP—2 pumps. Purchase power.
EMP—227. Last fiscal year output 178,602 tons.
Sales Agents, Greensburg Coal & Coke Co., 518 Commonwealth Trust Bldg., Philadelphia, Pa.

GREENSBURG-CONNELLSVILLE COAL & COKE CO.
Old Colony Nos. 1 and 2 Mine, Drift, Pittsburgh Seam, 8 ft. thick.
PO—Ligonier, Pa.; SP—North Ligonier, Pa.; CTY—Westmoreland; RR—Ligonier Valley, Wilpen Br.
PR—J. B. L. Hornberger, Pittsburgh, Pa.
TR—Geo. S. Baton, " "
CE—Geo. S. Baton & Co., " "
GM—W. A. Perry.....Ligonier, Pa.
PA—W. A. Perry, " "
MS—T. R. Newton and Ed. Joyce. Ligonier, Pa.
SCO—Ligonier Valley Supply Co., Buyer W. E. Gehres, Ligonier, Pa.
S of H—1 Gasoline loco. and mules.
S of M—Hand.
EMP—225. Last fiscal year output 125,086 tons. Coke ovens, 128 Bee Hive.

GREENWICH COAL & COKE CO.
General Office, Greensburg, Pa.
PR—Julian B. Huff....Greensburg, Pa.
PA—A. N. Pershing, " "
EM—Robt. Morris, " "
TR—Jos. E. Barnett.....Latrobe, Pa.
GS—M. J. Bracken.....Gallitzen, Pa.
EE—J. B. Morrell, " "
SCO—Greenwich Supply Co., " "
Sales Agents, Keystone Coal & Coke Co., Philadelphia, Pa.

Nos. 2 and 3 Mines; Drift and Slope; "D" Seam; 3 to 4 ft. thick.
PO—Saxman, Pa.; SP—Garman, Pa.; CTY—Cambria; RR—Penna., Cresson Div.
MS—Fred Vinton.....Saxman, Pa.
S of H—Rope and 5 Elec. loco.; track gauge 36 in.
S of M—Hand, 9 Elec. and 9 Comp. Air mach.
PP—6 Return tubular boilers (Union Iron Works and Erie City Iron Works), total 725 H. P., 2 gen. units, 250 volts D. C., 1 air comp., and 3 Elec. pumps.
EMP—300. Last fiscal year output 224,546 tons.

Nos. 5 and 8 Mines; Drift and Slope; "B" Seam; 42 to 48 in. thick.
PO—Starford, Pa.; SP—Shankton, Pa.; CTY—Indiana; RR—Penna., Cresson Div.
MS—William Reed.....Starford, Pa.
S of H—Rope and 5 Elec. loco.; track gauges, 42 and 36 in.
S of M—5 Elec. mach.
PP—5 Return tubular boilers (Union Iron Works and Erie City Iron Works), total 550 H. P., 2 gen. units, 275 volts D. C., 1 air comp., and 3 pumps.
EMP—403. Last fiscal year output 177,442 tons.

GROVE CITY COAL MINING CO.
General Office, Grove City, Pa.
New Hope Mine, Shaft, Brookville Seam, 4 ft. 2 in. thick.
PO—Jackson Center, Pa.; SP—Same; CTY—Mercer; RR—P.R.R., E. & A. Div.
PR—R. P. Cann.....Stoneboro, Pa.
TR—S. M. Stevenson, Grove City, Pa.
GS—N. A. Milner, " "
S of H—Mules; track gauge 32 in.
S of M—Hand.
PP—2 Return tubular boilers, total 275 H.P.
EMP—50. Last fiscal year output, 28,800 tons.
Note—Mine closed down indefinitely.

GUION COAL CO.
Guion Mine.
PO—Philipsburg, Pa.; SP—Same; CTY—Centre.
GM—J. Guion.....Phillipsburg, Pa.
PP—2 Return tubular boilers, total 180 H. P., 1 air comp., 1 pump.
State report.

GUMBERT BROTHERS CO.
Camden and Rock Run Mines.
PO—Camden, Pa.; CTY—Allegheny.
State report.

HADDON COAL CO.
Haddon Mine, Drift
PO—Leechburg, Pa.; SP—Same; CTY—Armstrong; RR—West Penn.
GM—L. W. Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
MS—Wm. Gilson, " "
EM—E. A. Watters, " "
S of H—Mules.
S of M—Hand.
EMP—69. Last fiscal year output 54,988 tons.

HALE COAL CO.
Hale Mine; Drift; B Seam.
PO—Houtzdale, Pa.; CTY—Clearfield; RR—P. R. R.
PR—James N. Steinman, Lancaster, Pa.
TR—John F. Steinman, " "
GM—Harry Boulton, .. Houtzdale, Pa.
S of H—Elec. loco.
PP—Buy power.

HALL & KAUL.
Mine exhausted.

HAMILTON COAL CO.
General Office, Punxsutawney, Pa.
Hamilton Nos. 1, 2 and 3 Mines; Drifts; Seams 48 to 72 in. thick.
PO—Hamilton and Anita, Pa.; SP—Same and Anita Station, Pa.; RR—(H) P. R. R., (A) B. R. & P.
PR—H. G. Bowers....Punxsutawney, Pa.
GM—H. G. Bowers, " "
PA—H. G. Bowers, " "
MS—Ed. Carlson....Punxsutawney, Pa.
TR—G. E. Hagstrom, " "
GS—Ed. Carlson, " "
MS—Johnas Deahl.....Hamilton, Pa.
S of H—Mules.
S of M—Hand.
EMP—35. Last fiscal year output 40,729 tons.

HAMILTON COAL MINING CO.
Sold to the Burrell Coal Co.

HAMILTON, S. M. & CO.
General Office, Marine Bank Building, Baltimore, Md.
Adams Mine, Drift, Upper Kittanning or "C" Prime Seams, 36 to 48 in. thick.
PO—Wellscreek, Pa.; SP—Adams, Pa.; CTY—Somerset; RR—B. & O., Somerset & Cambria Branch.
PR—Howard Adams ....Baltimore, Md.
TR—Irving Adams, " "
GS—Phil. A. Shaffer.....Somerset, Pa.
PA—Phil. A. Shaffer, " "
EM—Phil. A. Shaffer, " "
S of H—Mules and rope; track gauge 42 in. (Will install Elec. Haulage.)
S of M—Hand and 3 comp. air mach.
PP—2 Erie return tubular boilers, total 180 H. P., 1 compressor. (Expect to purchase power.)
EMP—64. Last fiscal year output, 29,954 tons.

HAMILTON, R. A. COAL CO.
Out of business.

HAMMILL SMOKELESS COAL CO.
In bankruptcy.

HARPER COAL CO.
Harper and Leek Run Mines; Drifts; Pgh. Seam, 56 to 60 in. thick.
PO—Turtle Creek, Pa.; SP—Hall, Pa.; CTY—Allegheny; RR—Union.
PR—John Irvin.....Turtle Creek, Pa.
TR—Thos. Harper, " " "
PA—Thos. Harper, " " "
MS—Thos Harper, " " "
EM—C. P. Taylor.....Pittsburg, Pa.
S of H—Mules; track gauge, 44 in.
S of M—Hand.
EMP—74. Last fiscal year output, 51,776 tons.
Sales Agent, Thos. Harper, Turtle Creek, Pa.

HARBISON-WALKER REFRACTORIES CO.
General Office, Farmers Bank Bldg., Pittsburg, Pa.
PR—H. W. Croft.....Pittsburg, Pa.
GM—H. W. Croft, " "
TR—Wm. Walker, " "
PA—C. T. Stewart, " "
GS—J. M. Baker, Woodland, Pa., and Nin McQuillan, Clearfield, Pa.

Riverside Mine; Drift; Moshannon Seam, 36 in. thick.
PO—Clearfield, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R., T. & C. Div.
S of H—Mules; track gauge, 36 in.
S of M—Hand.

Retort Mine; Drift; "B" Seam, 48 in. thick.
PO—Sandy Ridge, Pa.; SP—Retort, Pa.; CTY—Centre; RR—P. R. R.
MS—Charles Heath..Sandy Ridge, Pa.
SCO—Vulcan Trading Co, Retort, Pa., Powellton P. O.
S of H—1 Steam loco.
S of M—Hand.
EMP—18. Last fiscal year output, 10,000 tons.

HARDING COAL CO.
Margaret Mine; Drift; Redstone Seam, 48 to 60 in. thick.
PO—Elk Lick, Pa.; SP—West Salisbury, Pa.; CTY—Somerset; RR—B. & O., Salisbury Br.
PR—James Harding.....Elk Lick, Pa.
TR—James Harding, " "
MS—James Harding, " "
S of H—Mules
S of M—Hand.
EMP—20. Last fiscal year output, 12,000 tons.
Formerly Fairview Mine Meyersdale Smokeless Coal Co.

HARRIS, JAS. & SONS.
Harris Mine No. 1, Drift, Miller or "B" Seam, 3 ft. thick.
PO—Lilly, Pa.; SP—Same; CTY—Cambria; RR—P.R.R.
PR—Jas. Harris .....Lilly, Pa.
TR—Jas. Harris, " "
GM—John Harris, " "
MS—John Harris, " "
PA—John Harris, " "
S of H—Mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—1 Vertical 25 H.P. boiler.
EMP—29. Last fiscal year output, 23,622 tons.
Sales Agent, A. H. Slayman, Altoona, Pa.

HARVEY COAL CO.
Harvey Mine; Drift; L. Kittanning Seam, 3 ft. thick.
PO—Strattonville, Pa.; SP—Same; CTY—Clarion; RR—L. E., F. & C.
PR—W. A. Crawford, Strattonville, Pa.
GM—J. M. Harvey, " "
TR—J. M. Harvey, " "
GS—J. M. Harvey, " "
PA—J. M. Harvey, " "
SCO—Brush Run Supply Co., " "
S of H—8 Ton gasoline motor and mules; track gauge 36 in.
S of M—Hand.
PP—Purchase power.
EMP—75. Last fiscal year output 20,000 tons.

HASTINGS COAL & COKE CO.
Kinport No. 1 Mine, Drift, L. Freeport Seam, 3 ft. 10 in. to 3 ft. thick.
PO—Cherry Tree, Pa.; SP—Kinport, Pa.; CTY—Indiana.
PR—A. W. Hillebrand, No. 1 Broadway, New York, N.Y.
TR—B. R. Lloyd.....Hastings, Pa.
GM—John C. Cosgrove, Cherry Tree, Pa.
GS—John C. Cosgrove, " " "
MS—John Auld, " " "
EM—Chas. Schlecher ....Spangler, Pa.
SCO—Kinport Store Co., Buyer, Clair Goodman, Cherry Tree, Pa.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—2 Elec. mach.; hand.
PP—150 K. W. motor generator, 3 pumps.
EMP—100. Last fiscal year output, 90,000 tons. Coke ovens, 50
Sales Agent, Mr. Cosgrove, 420 Stephen Girard Bldg., Philadelphia, Pa.

HARTLAND, E. F. COAL & COKE CO.
General Office, 1017 House Bldg., Pittsburgh, Pa.
Hartland Mine; Drift; Pgh. Seam; 6 to 8 ft. thick.
PO—Pittsburgh, Pa.; SP—Idlewood, Pa. CTY—Allegheny. RR—P.R.R.
PR—E. F. Hartland..Pittsburgh, Pa.
GM—E. F. Hartland, " "
PA—K. H. Irons, " "
MS—K. H. Irons, " "
SM—K. H. Irons, " "
S of H—3 Elec. loco.; track gauge 44 in.
S of M—8 Elec. and 2 comp. air mach.
PP—4 Return tubular boilers, total 600 H. P., 1 gen. unit 250 volts D. C., 1 comp. and 3 pumps.
EMP—205. Coke ovens 100. Last fiscal year output 198,000 tons.

HAWS, A. J. & SONS, LTD.
Shaft and Coopersdale Mines; Shafts; Miller Seam, 18 to 49 in. thick.
PO—Johnstown, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
CHAIRMAN—Wm. H. Haws, Johnstown, Pa.
TR—Jas. P. Thomas, " "
GM—Jas. P. Thomas, " "
GS—Harry L. Tredennick, " "
MS—John T. Werry and Wm. Ramstedt,
MM—Ralph Cooper, Johnstown, Pa.
S of H—Mules; track gauge, 28 in.
S of M—Hand.
PP—Power purchased; 4 pumps
EMP—67. Last fiscal year output, 48,973 ons.
Mine coal for their own use.

HAYES RUN FIRE BRICK CO.
Mine worked out.

HAYS, W. S. B., COAL CO.
Calhoun Mine; Drift; Pittsburg Seam, 54 in. thick.
PO—408 Eighth Ave., Homestead, Pa.; SP—Munhall, Pa.; CTY—Allegheny; RR—P. & L. E., P. V. & C.
PR—W. S. B. Hays.....Homestead, Pa.
GM—W. S. B. Hays, " "
TR—W. S. B. Hays, " "
GS—A. P. Hays, " "
PA—A. P. Hays, " "
CE—Walter A. Greig, " "
EM—Wm. W. Darsie, Fifth Ave., Pittsburgh, Pa.
S of H—Mules and gravity; track gauge 42 in.
S of M—Hand.
EMP—15. Last fiscal year output 4,176 tons.

HEATON, ISAAC F., & SON.
Pearl Tunnell Mine; Drift; "B" Seam, 36 in. thick.
PO—Viaduct, Pa.; SP—Pearl, Pa.; CTY—Clearfield; RR—N. Y. C.
PR—Isaac F. Heaton....Viaduct, Pa.
GM—Isaac F. Heaton, " "
MS—Isaac F. Heaton, " "
PA—Walter E. Heaton, " "
S of H—Mules and rope.
S of M—Hand.
EMP—40. Output will be 150 tons per day.
Successors to O. J. Harm & Co.

HEDSTROM COAL MINING CO.
Now Church Hill Mining Co.

HEGARTY'S S. SONS.
Oakland Nos. 2 and 3 Mines; Drift; B Seam, 3 ft. 9 in. to 5 ft. thick.
PO—Coalport, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R., P. & N. W. Branch.
GM—W. W. Hegarty....Coalport, Pa.
PA—W. W. Hegarty, " "
SM—W. W. Hegarty, " "
EM—W. W. Hegarty, " "
MS—John Shaw and John Garrity, Coalport, Pa.
S of H—Mules and rope, track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 120 H. P.
EMP—151.

HEIL, WM.
Mt. Verde Mine; Drift; Miller Seam, 3 ft. thick.
PO—Rosebud, Pa.; SP—Irvona, Pa.; CTY—Clearfield; RR—P. & N. W.
MS—Wm. Heil.....Rosebud, Pa.
SM—K. M. Heil, " "
S of H—Mules.
S of M—Hand.

HENDERSON COAL CO.
General Office, Pittsburgh, Pa.
PR—W. M. Henderson...Pittsburgh, Pa.
TR—W. M. Henderson, " "
GM—W. M. Henderson, " "
GS—Arthur McCune, " "
EM—Arthur McCune, " "
PA—E. E. Ebbert, " "
Sales Agent, W. M. Henderson.

Irons Mine, Drift, Pittsburgh Seam, 6 ft. thick.
PO—Charleroi, Pa.; SP—East Charleroe, Pa; CTY—Westmoreland; RR—P. & L.E.
S of H—5 Elec. loco.; track gauge 42 in.
S of M—6 Elec. machines and pick mining.
PP—Buy power.
EMP—225. Last fiscal year output, 212,279 tons.

Kennedy Mine, Drift, Pittsburgh Seam, 5 ft. 6 in. thick.
PO—Webster, Pa.; SP—Same; CTY—Westmoreland; RR—P. & L. E.
S of H—4 Elec. loco.; track gauge 42 in.
S of M—6 Elec. machines and pick mining.
PP—Buy power.
EMP—200. Capacity 1,200 tons daily.

Umpire Mine, Drift, Pittsburgh Seam, 7 ft. thick.
PO—Brownsville, Pa.; SP—Same; CTY—Fayette; RR—Monon. R.R.
MS—C. C. McVicker...Brownsville, Pa.
S of H—1 Elec. loco.; track gauge 44 in.
S of M—2 Elec. machines and pick mining.
PP—Buy power.
EMP—75. Last fiscal year output, 42,679 tons.

No. 1 Mine; Shaft; Pittsburgh Seam.
SP—Hendersonville, Pa.; RR—Montour.
S of H—Elec.; track gauge 42 in.
S of M—Elec.
PP—Power purchased.
Output daily, when developed, 2,500 tons.

HENRIETTA COAL CO.
Henrietta No. 5 Mine. CTY—Clearfield.
GS—Asa Spencer.....Houtzdale, Pa.
No report.

HENRIETTA COAL MINING COMPANY.
General Office, Altoona, Pa.
Henrietta No. 2 Mine; Shaft; "B" or Miller Seam 30 to 44 in. thick.
PO—Dunlo, Pa.; SP—Same; CTY—Cambria. RR—P. R. R., South Fork Branch
PR—G. R. Byrd.....New York, N. Y.
TR—Gardner Cassett .....Phila., Pa.
GS—B. E. Phillips .....Dunlo, Pa.
PA—B. E. Phillips, " "
EM—J. S. Sillyman & Co., Altoona, Pa.
EE—Chas. Bracken .....Dunlo, Pa.
SCO—Henrietta Supply Co., Buyer, W. D. Cannan, Altoona, Pa.
S of H—Mules, rope and 2 elec. loco., track gauge 36 in.
S of M—Hand.
PP—6 Return tubular boilers, total 900 H.P., 2 gen. units 550 volts D.C., 2 pumps.
EMP 115. Last fiscal year output 235,000 tons.

HEVERLY COAL CO.,
General Office, Altoona, Pa.
Cammos Mines Nos. 1 and 2, Drifts, C Vein 30 to 36 in. thick.
PO Coalport, Pa.; SP Heverly, Pa.; CTY—Clearfield; RR—P. R. R., Bellwood Div.
PR F. W. Hahn.....Coalport, Pa.
MS—F. W. Hahn, " "
TR—L. M. Ryan,.....Altoona, Pa.
GM—L. M. Ryan, " "
GS L. M Ryan, " "
PA—L. M. Ryan, " "
PA—L. M. Rwan, " "
CE—J. Sillyman & Co., " "
EM—J. Sillyman & Co., " "
SCO—Heverly Supply Co.....Heverly, Pa.
S of H—Mule; track gauge 36 in.
S of M Hand.
EMP—175.
Sales Agency, Cambria & Moshannon Coal Co.

HIGHLAND COAL MINING CO.
Mine exhausted.

HILLWORTH COAL CO.
Belmont Nos. 1, 2 and 3 Mines; Drifts; "C" Prime and "E" Seams; 36 to 50 in. thick.
PO Acosta, Pa.; SP Same; CTY—Somerset; RR—B. & O., Quemahoning Branch.
PR—A. W. Hillebrand, New York, N. Y.
TR—W. F. Ainsworth, " " " "
GM—J. C. Cosgrove, Johnstown, Pa.
MS—T. A. Courtney, Acosta, Pa.
SCO—Acosta Supply Co., Acosta, Pa.
S of H—1 Elec. loco. and mules; track gauge, 42 in.
S of M—Hand.
PP—Power purchased.
EMP—105.
Sales Agency, A. W. Hillebrand Co., New York, N. Y.
Successors to the Belmont-Quemahoning Coal Co.

HINES COAL CO.
General Office, Land Title Bldg., Philadelphia, Pa.
Hines Nos. 1 and 2 Mines; Drifts; "B" Seam, 36 to 48 in. thick.
GS—C. E. Sharpless, Ebensburg, Pa.
Mine is about exhausted.

HIRSH COAL MINING CO.
Flora Mine; Drift; "B" Seam, 40 in. thick.
PO—Hooversville, Pa.; SP—Same; CTY—Somerset; RR—B. & O.
MS—Peter W. Neish, Hooversville, Pa.
EM—Mr. Kimmell. " "
EMP—25. Output 6,000 tons.
Sales Agency, James Dugan, Harrison Bldg., Philadelphia, Pa.

HOCKING, W. C.
Operates under lease Garret No. 3 Mine of The Mountain Smokeless Coal Co. See M. S. Coal Co. data.

HOCKING COAL CO.
Hocking Mine.
PO—Meyersdale, Pa.; SP—Berlin, Pa.; CTY—Somerset.
GM—Wm. G. Hocking..Meyersdale, Pa.
MS—Wm. Horeck, " "
S of H—1 Elec. loco.
S of M—Hand and comp. air mach.
PP—2 Return tubular boilers, total 300 H. P., 1 air comp., 1 pump.
EMP—46.

HOGSETT COAL & COKE CO.
Mine closed, discontinued operating.

HOLT, W. F.
Phoenix Mine, Drift, D. & E. Seam 2½ to 5 ft. thick.
PO—Philipsburg, Pa. SP—Hawk Run. CTY—Centre. RR—N.Y.C.&H.R.
PR—W. F. Holt.....Philipsburg, Pa.
MS—Tom Davis.....Philipsburg, Pa.
S of H—Mules, track gauge 36 in.
S of M—Hand.
PP—2 Elec. pumps. Purchase power.
Last fiscal year output 28,170 tons.

HOME COAL CO.
PO—Monongahela, Pa.
GM—R. H. Robinson, Monongahela, Pa.
PA—R. H. Robinson, " "
MS—John C. Rue, " "
S of M—Electric machine.
S of H—Mules.
EMP—5 Local mine.

HOMER CITY COAL CO.
General Office, Johnstown, Pa.
Homer Mine; Drift; Up. Freeport Seam, 72 to 78 in. thick.
PO—Homer City, Pa.; SP—Same; CTY—Indiana; RR—P. R. R., Indiana Branch
PR—John C. Cosgrove, Johnstown, Pa.
GM—John C. Cosgrove, " "
TR—L. F. Crawford.....Pittsburgh, Pa.
PA Lafayette Tuck.....Homer City, Pa.
MS—Lafayette Tuck, " " "
EM Chas. Schlick r.....Spangler, Pa
S of H—Rope and mules; track gauge 42 in.
S of M—2 Comp. air mach. and hand.
PP—2 Return tubular boilers, total 275 H.P., 2 gen. units, 1 compressor and 2 pumps.
EMP—150. Last fiscal year output 155,000 tons.

HOOVER, JAS. H.,
Hoover Mine, Slope and Drift.
PO—McClellandtown, Pa.; SP—Ache Junction, Pa.; CTY—Fayette; RR—P. R. R.
GM—Jas. H. Hoover, McClellandtown, Pa.
PA—Jas. H. Hoover, " "
MS—John Yanger, " "
S of H—Rope.
S of M—Hand.
PP—1 Return tubular boiler, total 120 H. P., 1 air comp., 1 pump.
EMP—64. Last fiscal year output, 53,550 tons. Coke ovens, 74.

HOPE COKE CO.
General Office, Uniontown, Pa.
Hope Mine, Drift, Sewickley, Seam.
PO—Smithfield, Pa., R.F.D. No. 7, SP Shoaf, Pa., CTY—Fayette.
RR—B. & O.
PR—J. M. Hustead...Uniontown, Pa.
TR—J. E. Hustead, " "
GM—J. E. Hustead, " "
PA—J. E. Hustead, " "
GS—W. B. Hustead, " "
CE—A. M. Hustead, " "
S of H—Rope.
S of M—Hand.
PP—1 60-H. P. boiler, 1 Pump.
EMP—35.
Sales Agent, J. E. Hustead, Uniontown, Pa.

HORN, J. EDWARD, & CO.,
General Office, Philadelphia, Pa.
GM—J. Edward Horn, Philipsburg, Pa.
Horn Nos. 7, 8, 9, 12, 14 mines; Drift; "A" and "B" Seam; 3-8ft. thick.
PO—Philipsburg, Pa.; SP— Same; CTY—Centre; RR—N.Y.C.&H.R.
S of H—2 Elec. loco., rope and mules; track gauge 36 in.
S of M—Hand.
PP—Purchase power.
EMP—321. Last fiscal tyear output 231,484 tons.

Monroe Mine; Drift; "C" Seam, 30-32 in.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield. RR—P.&S.
S of H—Mules, track gauge 30 in.
S of M—Hand.
EMP—23. Last fiscal year output 25000 tons.

HOSTETTER CONNELLSVILLE COKE CO. (H. C. FRICK COKE CO.)
General Office, Carnegie Bldg., Pittsburgh, Pa.
PR—W. H. Clingerman,..Pittsburgh, Pa.
TR—Philip Keller, " "
Secy—D. H. Coble, " "
PA—T. S. Duncan, " "
Auditor—C. P. Parker, " "
GS—Clay F. Lynch.....Scottdale, Pa.
GS—Asst. W. H. Glasgow, " "
CE—J. P. K. Miller, " "
CE—Asst., T. W. Dawson, " "
Mech. Engr.—G. E. Huttelmaier, Scottdale, Pa.
EE—A. T. Bull, " "
SCO—Union Supply Co., Buyer, C. L. Steiner, Frick Bldg., Pittsburgh, Pa., Genl. Supt. of Stores, John Lynch, Uniontown, Pa.

Hostetter Mine, Slope, Pgh. Seam, 7 to 7½ ft. thick.
PO—Hostetter, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R., Unity Branch.
MS—R. W. Maher, .. Hostetter, Pa.
S of H—1 steam loco.
S of M—? Comp. air machines.
PP—17 return tubular boilers, total 225 H. P., 2 comp. and 7 pumps.
EMP—348. Last fiscal year output 331,316 tons.

Whitney Mine, Slope, Pgh. Seam, 7 to 7½ ft. thick.
PO—Whitney, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R., Unity Branch.
MS—George Eustis, ... Whitney, Pa.
S of H—2 steam locos.
S of M—7 Comp. air machines.
PP—9 return tubular boilers, total 1,180 H. P.
EMP—341. Last fiscal year output 347,414 tons.

HOWARD GAS COAL CO.
General Office, Greensburg, Pa.
Mt. Grey Mine, Drift, Pittsburgh Seam, 5 1-2 to 6 ft. thick.
PO—Saltsburg, Pa., SP—Same, CTY—Indiana. RR—Penna. Conemaugh Div.
PR—J. Howard Patton, Greensburg, Pa
TR—Howard C. Patton, " "
GM—Howard C. Patton, " "
GS—Howard C. Patton, " "
PA—Howard C. Patton, " "
EM—Robt. Morris, " "
MS—George Weightman, Saltsburg, Pa
SCO—Howard Supply Co., " "
Buyer S. D. Hackley, " "
S of H—1 Elec. loco., track gauge 40 in.
S of M—2 Elec. machines and 6 comp. air mach.
PP—4 Erie City return tubular boilers, total 600 H. P., 1 Gen. unit 500 volts D. C., 1 Air compressor and 3 pumps.
EMP—150. Last fiscal year output 112,750.82 tons.
Sales Agent, J. D. Hackley.

HUDSON COAL MINING CO.
General Office, Punxsutawney, Pa.
Hudson Mine; Drift; Upper Freeport Seam, 3 1-2 to 4 1-2 ft. thick.
PO Winslow, Pa.; SP—Same; CTY—Jefferson.
RR Penna., Belwood-Punxsutawney Div.
PR—H. C. Winslow, Punxsutawney, Pa.
MS—H. C. Winslow, " "
TR—H. M. Kanarr, " "
PA H. M. Kanarr, " "
S of H—Mules; Track gauge 36 in.
S of M— Hand.
EMP—20; Last fiscal year output 11,000 tons.
Sales Agent, H. M. Kanarr, Punxsutawney, Pa.

HUFF COAL CO. (THE)
Maude Mine; Drift; "C" Prime Seam;
PO—Humbert, Pa.; SP—Same; CTY—Somerset; RR—Ursina & North Fork
GM—I. T. Huff.....Humbert, Pa.
PA—H. L. Campbell " "
MS—Wm. Zimmerman, " "
SCO—Humbert Store Co., Buyer, S. A. Patterson, Humbert, Pa.
S of H—Elec.
S of M—Elec.
PP—2 boilers, total 200 H. P., 550 volts D. C.
EMP—50.

HUGHES, W. H. & CO.
General Office, Altoona, Pa.
GM—W. H. Hughes....Altoona, Pa.
GS—W. H. Hughes, " "
PA—W. H. Hughes, " "
ME—W. H. Hughes, " "
Sales Agent, W. H. Hughes, Altoona, Pa.

Hughes No. 1 Mine; Drift "B" Seam 34 to 44 in. thick.
PO—Lilly, Pa.; SP—Same; CTY—Cambria; RR—P.R.R. Lilly Br.
MS—David Mort.....Lilly, Pa
S of H—1 Elec. loco., track gauge 36 in.
S of M—Hand.
PP—Power purchased.

Hughes No. 2 Mine; Slope, B Seam 40 to 54 in. thick.
PO—Cassandra, Pa.; SP—Bens Creek, Pa.; CTY—Cambria; RR—P.R.R. Ben's Creek Branch.
MS—George Hassenpflug....Lilly, Pa.
S of H—3 Elec. loco. and rope; track gauge 36 in.
S of M—2 Elec. mach. and hand.
PP—2 pumps. Purchase power.
EMP—175. Last fiscal year output 103,676 tons.

HUMPHRIES, E. A., COAL & COKE CO
General Office, Scottdale, Pa.
Chestner No. 2 Mine, Drift, 7½ to 8 ft. thick.
PO—Derry, Pa.; R.F.D.; SP—Loyalhanna, Pa.; CTY—Wesmoreland.
RR—Penna. R.R., Bradenville Branch.
PR—W. F. Stauffer.....Scottdale, Pa.
TR—J. M. Zimmers, " "
GM—Clarence Deal.....Derry, Pa.
MS—Clarence Deal, " "
PA—Clarence Deal, " "
MF John Ainscough.....Latrobe, Pa.
CE—S. M. Foust.
EM—S. M. Foust.
MM—A. Allison.....Derry, Pa.
SCO—E. A. Humphries Supply Co.
Buyer, Clarence Deal, Derry, Pa. R.D.1.
S of H—Rope; 1 Steam loco., track gauge 42 in.
S of M—Hand.
PP—2 Erie City return tubular boilers, total 400 H. P., 1 Gen. unit 250 volts D. C., 1 pump.
EMP—48. Last fiscal year output 47,017 tons.
50 Rectangular coke ovens.
Sales Agent, J. M. Zimmers, Scottdale, Pa.

HUNTINGDON COAL CO.
General Office, Huntingdon, Pa.
Delaware No. 1 Mine, Slope.
PO—Six Mile Run, Pa. SP—Coaldale, Pa. CTY—Bedford. RR—H. &B.T.
GM—Daniel Everhart, Six Mile Run, Pa.
PA—E. A. Miller, " "
MS—Daniel Everhart, " "
SM—Irvin Cypher, " "
S of H—Rope.
S of M—Hand.
PP—Gen. units, 250 volts, 2 boilers, 70 H. P.
EMP—90.

HUSTEAD-SEMANS COAL & COKE CO.
General Office, Uniontown, Pa.
Hustead Mine, Slope, Pittsburgh Seam.
PO—East Millsboro, Pa. SP—Same. CTY—Fayette. RR—P. R. R., Monon. Div.
GM—J. E. Hustead, ..Uniontown, Pa.
PA—J. E. Hustead, " "
MS—Wm. Goodfellow, E. Millsboro, "
SM—Hustead-Semans Supply Co. Buyer, F. M. Hackney, East Millsboro, Pa.
S of H—Rope.
S of M—Elec. and comp. air machs.
PP—9 boilers, total 1,430 H. P. gen. units, 250 volts D. C.
EMP—125.

INDIAN HEAD COAL & COKE CO.
Slope Mine; Freeport Seam, 48 in. thick.
PO—Indian Creek, Pa.; SP—Same; CTY—Fayette; RR B. & O.
Continued on Next Page.

PR—J. A. Shoetz.....Indian Creek, Pa.
TR—W. D. Walthour, " "
GM—C. S. Pore, " "
PA—C. S. Pore, " "
EM—C. S. Pore, " "
MS—C. S. Pore, " "
S of H—Rope.
Developing at present, July 15.

INDIAN HEAD COAL MINING CO.
Indian Head No. 1 Mine.
PO—Indian Head, Pa.
No report.

INDIANA COAL CO.
General Office West End Trust Bldg., Phila., Pa.
Indiana Nos. 3, 4, 5 and 8 Mines; Drifts; "E" Seam, 3½ to 4 ft. thick.
PO—Glen Campbell, Pa.; SP— Same; CTY—Indiana; RR—P. R. R., N. Y. C.
PR—Ned Irish .....Phila., Pa.
TR—D. R. Wyeth, " "
GM—George Scott ....Philipsburg, Pa.
PA—George Scott, " "
MS—George Scott, " "
SCO—Mammoth Supply Co., Buyer George Scott, Philipsburg, Pa.
S of H—1 Elec. loco. and mules.
S of M—2 Elec. mach. and hand.
PP—2 Keeler, return tubular boilers, total 225 H.P. gen. units 500 volts D. C., 1 pump.
EMP—55. Last fiscal year output 35,000 tons.

INDIANA SMOKELESS COAL CO. (THE)
PR—T. M. Kurtz, Punxsutawney, Pa.
Secy—Vernon F. Taylor, Brockawayville, Pa.
No report.

INGLESIDE COAL CO.
Mine not in operation.

IRISH BROS. COAL CO.
In the hands of Receiver.

IRVONA COAL & COKE CO
General Office, Philadelphia, Pa.
Irvona Nos. 5 and 10 Mines; Drift and Slope; "B" Seam, 48 to 60 in. thick.
PO—Rosebud, Pa.; SP—Coalport, Pa.; CTY—Clearfield; RR—P. R. R., P. & N. W. Br.
PR—Roy A. Hatfield..Philadelphia, Pa.
TR—Joseph T. Hilles, " "
PA—Joseph T. Hilles, " "
EM—P. F. Womeldorf, " "
GM—A Bathgate.....Coalport, Pa.
GS—A. Bathgate, " "
MS—George Bathgate, " "
MM—Jas. Bathgate and W. F. Boone, Coalport, Pa.
EE—John Bownell, " "
SCO—Blaine City Supply Co.; Buyer A. Bathgate, Coalport, Pa.
S of H—3 Elec. loco.; track gauge, 36 in.
S of M—8 Elec. mach.
PP—7 Return tubular boilers, total 450 H. P., 3 gen. units 250 volts D. C., 3 pumps.
EMP—200. Coke ovens, 100 Bee Hive.
Last fiscal year output, 150,000 tons.

ISABELLA CONNELLSVILLE COKE CO.
General Office, Pittsburgh, Pa.
Isabella Mine; Shaft; Pittsburgh Seam, 72 to 108 in. thick.
PO—Brownsville, Pa.; SP—Isabella Station, Pa.; CTY—Fayette. RR—P. R. R., Monongahela Div.
Samuel A. Gilmore, Receiver, Pgh., Pa.
James D. O'Neil, " "
Wm. K. Johnson, " "
PA—J. I. Boyd.....Pittsburgh, Pa.
MS—W. J. Kearns....Brownsville, Pa.
EM—Geo. S. Baton & Co., Pittsburgh, Pa.
MM—Thos. Haulton, " "
EE—Thos. Houlton, " "
SCO—Edna Supply Co., Buyer H. D. Bittner, Pittsburgh, Pa.
SM—E. P. Regrutto, Brownsville, Pa.
S of H—1 elec. loco.; track gauge 44 in.
S of M—14 Comp. air mach. and elec.
PP—4 Water tube boilers, total 1600 H. P., 2 gen. units 500 volts D. C., 2 air compressors and 3 pumps. Note—Min idle.
Coke Ovens 124 Bee Hive, 136 Rectangular.

IVY RIDGE COAL CO.
Ivy Ridge Mine; Drift; "B" Seam.
PO—Rockwood, Pa.; SP—Same; CTY—Somerset; RR—B. & O.
GS—E. Schmittle.....Rockford, Pa.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—1 Elec. mach.
PP—2 Return tubular boilers, gen unit, 250 volts D. C.
Output, 200 to 300 tons per day.

JAFFA COAL MINING CO.
Florence Mine; Drift; B. Seam 4 ft. thick.
PO—Brisbin, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R., Amesville Br.
PR—W. H. Patterson, ...Clearfield, Pa.
TR—T. V. Gould.....Brisbin, Pa.
PA—T. V. Gould, " "
GM—George Lobb, " "
GS—George Lobb, " "
S of H—Mules.
S of M—Hand.
EMP—25. New Operation.
Sales Agency, W. A. Gould & Bro., Brisbin, Pa.

JANESVILLE COAL CO.
General Office, Clearfield, Pa.
Vulcan Mine, Shaft, "B" Miller seam.
PO—Ramey, Pa.; SP—Fernwood; CTY—Clearfield.
PR—Fred G. Belts.....Clearfield, Pa.
GM—Fred G. Belts, " "
PA—Fred G. Belts, " "
S of H—Mules; Track gauge 3 ft.
S of M—Hand.
PP—2 Return tubular boilers, total 200 H. P.
Last fiscal year output 40,000 tons.

JAMISON COAL & COKE CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
5 mines in Pa., 3 in W. Va.
PR—J. M. Jamison, Oliver Bldg., Pgh., Pa.
TR—D. MacLeod, " "
PA—M. W. Head, " "
GM—R. H. Jamison....Greensburg, Pa.
EM—C. E. Cowan, " "
GS—J. C. Jamison and T. P. Latta, Hannastown, Pa.
SCO—Jamison Supply Co., Buyer, H. C. Nicewanger, Hannastown, Pa.
Sales Agents, W. G. Ireland and R. Donandson, Oliver Bldg., Pittsburgh, Pa.

No. 1 Mine, Slope, Pgh Seam, 7 ft. thick; Operate, Washery.
PO—Luxor, Pa.; SP—Same; CTY—Westmoreland.
RR—P. R. R., Alexandria Branch.
MS—A. J. Mase.....Luxor, Pa.
SM—J. F. Harsha, " "
S of H—7 Elec. loco., mules and rope; track gauge 40 in.
S of M—8 Elec. mach. and hand.
PP—5 Water Tube, Stirling Boilers, total 1500 H.P., gen. units 275 volts D. C., 1 pump.
EMP—416. Coke ovens, 400 Bee Hive.
Last fiscal year output 525,070 tons.

No. 2 Mine, Shaft, Pgh. Seam, 7 ft. thick; Operate, Washery.
PO—Hannastown, Pa.; SP—Same; CTY—Westmoreland.
RR—P. R. R., Alexandria Branch.
MS—H. W. Sadler.....Hannastown, Pa.
SM—W. C. Feely, " "
S of H—Mules and 6 Elec. loco. track gauge 40 in.
S of M—Hand and 8 Elec. mach.
PP—12 Water tube boilers, 8 Stirling, 4 Heine, total 4,200 H.P., 2 gen. units, 275 volts D.C., 7 pumps
EMP—619. Coke ovens, 516.
Last fiscal year output 746,470 tons.

Nos. 3 and 6 Mines, Shaft and Slope, Pgh. Seam, 7 ft. thick.
PO—Forbes Road and Greensburg, Pa.; SP—Same and Jamison Colliery No. 6, Pa.; CTY—Westmoreland; RR—P. R. R., Alexandria Br.
MS—Ralph E. Jamison, Forbes Road, Pa.
SM—No. 3, Wm. Brigsman ;No. 6, Wilbur Morton, Forbes Road, Pa.
S of H—9 Elec. loco., mules and rope; track gauge 40 in.
S of M—16 Elec. mach.
PP—Water tube boilers, 4 Stirling, 1 Heine, total 1600 H. P., 2 gen. units 275 volts D. C., 3 pumps.
EMP—584. Last fiscal year output, No. 3, 545,030 tons; No. 6, 259,060 tons.

No. 4 Mine, 2 Slopes, Pgh. Seam, 7 ft. thick; Operate, Washery.
PO—Crab Tree, Pa.; SP—Same; CTY—Westmoreland.
RR—P. R. R., Alexandria Branch.
MS—E. M. Turney.....Crab Tree, Pa.
SM—W. P. Harris, " " "
S of H—12 Elec. loco., mules and rope; track gauge 40 in.
S of M—17 Elec. mach.
PP—8 Water Tube Heine Boilers, total 3,200 H. P., 3 gen. units, 275 volts D. C. and 2 pumps.
EMP—884. Coke ovens, 506 Bee Hive.
Last fiscal year output 1,204,620 tons.

JEFFERSON COAL CO.
General Office, South Bethlehem, Pa.
Coal Glen Nos. 1 and 2 Drifts.
PO—Coal Glen, Pa. SP—Same. CTY—Jefferson. RR—B. R. & P.
GM—Austin Blakeslee, S. Bethlehem Pa.
PA—F. B. Blakeslee, .. Coal Glen, "
MS—F. B. Blakeslee, " "
EM—C. A. Blakeslee, .. Falls Creek, "
SCO—Abbott & Blakeslee Co.
S of H—Mules and 1 steam loco.
S of M—Hand.
PP—1 return tubular boiler, total 75 H. P., 2 pumps.
EMP—183. Last fiscal year output 155,200 tons.

JEFFERSON & CLEARFIELD COAL & IRON COMPANY.
General Office, Punxsutawney, Pa.
PR—L. W. Robinson, Punxsutawney, Pa.
TR—Geo. H. Clune, Rochester, N. Y
GM—F. M. Fritchman, Indiana, Pa.
EM—G. W. Brymer, " "
PA—H. C. Smith, Punxsutawney, "
EE—L. W. Householder, " "
GS—I. J. Harvey, .. Helvetia,
SCO—Jefferson Supply Co., Mgr., D. H. McIntyre, Punxsutawney, Pa.
Sales Mgr. Geo. L. Eaton, Rochester, N. Y.

Soldier Run and Trout Run Mines, Shaft, Slope and Drifts, L. Freeport Seam.
PO—Soldier, Pa. SP—Reynoldsville, Pa. CTY—Jefferson. RR—B. R. & P.
MS—J. S. Hammond, Reynoldsville, Pa.
S of H—19 elec., 2 steam locos. and rope.
S of M—92 comp. air machines.
PP—42 return tubular boilers, total 5,750 H. P., 12 compressors and 25 pumps.
EMP—968.

Jacksonville Mines, Drift and Shafts, Lower and Upper Freeport Seams.
PO—McIntyre, Pa. SP—Same and Aultman, Pa.; CTY—Indiana; RR—B. R. & P.
MS—M. Maloney.....McIntyre, Pa
S of H—11 elec. locos.
S of M—8 elec. and 48 comp. air machines.
PP—3 Compressors and 6 pumps.
EMP—517.

Ernest Mines, Drift and shaft, Upper Freeport Seam.
PO—Ernest, Pa. SP—Same. CTY—Indiana; RR—B. R. & P.
MS—S. T. Oldham.....Ernest, Pa.
S of H—29 elec. locos.
S of M—129 Comp. air and elec. machines.
PP—24 boilers, total 5,415 H. P., 7 compressors and 14 pumps.
EMP—896.

JENKINS BROS.
No. 1 Mine, Drift Mine.
"E" Seam, 32 to 40 in thick.
PO—Blossburg, Pa.; SP—Same; CTY—Tioga RR—N. Y. C. Tioga Br.,
PR—W. Scott Jenkins...Blossburg, Pa.
TR—Scott Jenkins.....Blossburg, Pa.
PA—Scott Jenkins, " "
CE—Scott Jenkins, " "
GM—Thos. Jenkins, " "
MS—Robt. English, " "
SCO—Address the Company.
S of H—Mules. Track gauge 29 1-2
S of M—Hand.
EMP—55. Last fiscal year output 26,000 tons.
Sales Agent, Scott Jenkins, Blossburg, Pa.

JENNER—QUEMAHONING COAL CO.
General Office, Pittsburgh, Pa.
Jerome Mine, Shaft, C Prime Seam 6 ft. thick.
PO—Jerome, Pa.; SP—Same; CTY—Somerset. RR—B. & O
PR—James D. O'Neil..Pittsburgh, Pa.
GM—James D. O'Neil, " "
TR—Thurston Wright, " "
PA—J. I. Boyd, " "
GS—John Gibson, Jr.
MS—B. F. Baldwin.....Jerome, Pa.
EM—H. M. Schmidt..Pittsburgh, Pa.
MM—Thos. Haulton.
SCO—Penn Merchantile Co., Buyer H. D. Bittner, Pittsburgh, Pa.
SM—C. A. Truax, Jerome, Pa.
S of H—18 Elec. loco. and mules, track gauge 42 in.
S of M—27 Elec. mach.
PP—12 Return tubular boilers, total 1800 H. P., 4 Gen. units, 250 volts D. C.
Sales Agent, Thurston Wright, Pittsburgh, Pa.

JOHNSON FUEL CO.
General Office, Uniontown, Pa.
Percy Mine; Slope; Seam 66 to 72 in. thick.
PO—Percy, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
PR—C. W. Johnson, ..Uniontown, Pa.
GM—C. W. Johnson, " "
PA—C. W. Johnson, " "
TR—D. J. Johnson, " "
MS—J. W. Stirling, " "
CE—Harry Gans, " "
S of H—Elec. loco. and rope.
S of M—Hand.
PP—Power purchased.
EMP—16. Coke Ovens, 32 Bee Hive.
Last fiscal year output 32,220 tons.

JONES HILL COAL CO.
Jones Hill Mine CTY Tioga
GS—Malcolm McDougall..Blossburg, Pa.
No report.

JUNIATA COAL CO.
General Office, Alexandria, Pa.
Nos. 1 and 3 Mines, Drift and slope, B Rider Seam, 3ft. 10 in. thick.
PO—Lilly, Pa.; SP—Ben's Creek, Pa.; CTY—Cambria.
RR—P. R. R.
PR—John Phillips.....Alexandria, Pa.
GM—John Phillips, " "
GS—A. P. Hite.....Lilly, Pa.
CE—J. C. Sillyman.....Altoona, Pa.
MS—(1) Fred George, (2) John Kline, Portage, Pa.
S of H—1 Elec. hoist, track gauge 36 in.
S of M—Hand.
PP—Purchase power.
EMP—97.
Last fiscal year output 62,200 tons.

Sales Agent, George Henderson, Philadelphia, Pa.

KATO COAL CO.
Kato No. 5 Mine; B Seam, 42 to 60 in. thick.
PO—Kato, Pa.; SP—Same; CTY—Centre; RR—N. Y. C & H. R. R.
PR—Thomas F. Kelley, ...Kato, Pa.
GM—Thomas F. Kelley " "
PA—Thomas F. Kelley, " "
TR—I. B. Norris, " "
SCO—Kato Supply Co., " "
S of H—Mules.
S of M—Hand.
EMP—170. Last fiscal year output 88,000 tons.

KELLY BROS. COAL CO.
Vulcan Nos. 1 and 2; Cherry No. 2; Meyer Run No. 3; Olanta and Tunnel Mines ;Drifts.
PO—Snow Shoe, Pa. SP—Same. CTY—Center. RR—P. R. R., N. Y. C.
PR—H. P. Kelley.....Snow Shoe, Pa.
GM—M. D. Kelley, ..Snow Shoe, Pa.
MS—H. P. Kelley, " "
PA—John P. Kelley, " "
EM—Logan M. Kelly, " "
EE—Jos. J. Morgan, " "
SCO—Kelly Bros. Supply Co., Snow Shoe, Pa.
S of H—Mules, 1 Steam and 1 Gasoline loco.; track gauge 36 in.
S of M—Hand.
PP—1 return Tubular boiler, 50 H. P., 1 compressor, 5 pumps.
EMP—312. Last fiscal year output 188,422 tons.

KENNERLY, J. BLAIR, OPREATIONS.
Now Valley Smokeless Coal Co.

KERR COAL CO.
Kerr Mine, Drift, Upper Freeport Seam, 3 to 4 ft. thick.
PO—Freeport, Pa.; SP—Butler Junction, Pa., CTY—Armstrong.
RR—P.R.R., Conemaugh Div.
PR—Isaac Guckenheimer... Pgh., Pa.
TR—A. L. Strouse.....Freeport, Pa.
PA—A. L. Strouse, " "
GM—R. A. Steim, " "
MS—H. C. Scott, " "
CE—Edwin Taylor.
EE—Gus. Wester.....Freeport, Pa.
S of H—3 Elec. loco.
S of M—6 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 1 Gen. unit, 250 volts D. C., 1 pump.
EMP—85. Last fiscal year output 80,000 tons.
Sales Agent, R. A. Steim.

KETTLE CREEK COAL MINING CO.
General Office, Williamsport, Pa.
Kettle Creek Nos. 2, 5, 6 and 8 Mines; Drift; "B" Seam 5 to 7 ft. thick.
PO—Bitumen, Pa.; SP—Cooks Run, Pa. CTY—Clinton. RR—P.R.R., Erie Div.
PR—G. D. Tinsman..Williamsport, Pa.
GM—Wm. H. Miller.....Bitumen, Pa.
CE—Wm. H. Miller. " "
PA—Harry G. From. " "
MS—Harry G. From. " "
SCO—Bitumen Supply Co., Buyer J. E Fillinger, Bitumen, Pa.
S of H—10 Elec. loco.; track gauge 36 in.
S of M—3 Elec. mach. and hand.
PP—2 Keeler return tubular boilers, total 300 H. P., 2 gen. units 500 volts D. C., 4 pumps.
EMP—400.

KEYSTONE COAL CO.
General Office, York, Pa.
Mooween Mine.

Continued on Next Page.

KEYSTONE COAL CO.—Continued.
PO—Mooween, Pa.; SP—Same CTY—Somerset; RR—B. & O.
GM—J. E. Baker.....York, Pa.
PA—W. O. Houck, " "
MS—Edw. Bytheway.....Mooween, Pa.
S of H—3 Elec. Locos.
S of M—14 Elec. mach. and hand.
PP—3 return tubular boilers, total 450 H. P., 1 pump.
EMP—126. Last fiscal year output 148,411 tons.

KEYSTONE COAL & COKE CO.
General Office, Greensburg, Pa.
PR—Richard Coulter....Greensburg, Pa.
VP—L. B. Huff, " "
TR—F. B. Miller, " "
PA—Address Company at " "
GM—H. F. Bovard, " "
GS—H. F. Bovard, " "
EM—G. Wm. Hutchinson, " "
EE—G. Wm. Hutchinson, " "
CE—Randolph Means Co., Pittsburgh, Pa.
MM—James Wilson.....Darragh, Pa.
CE—Hempfield, Salem, Madison & Shaft Supply Companies.

Arona, Madison and Sewickley Mines; Drifts and Slope; Pittsburgh Seam, 78 to 93 in. thick.
PO—Darragh, Pa.; SP—Madison, Pa.; CTY—Westmoreland; RR—P. R. R. Hempfield Br.
MS—Chas. Daily.....Darragh, Pa.
SM—Wm. M. Duff.....Greensburg, Pa.
S of H—4 Elec. loco.; track gauge 40 in.
S of M—28 Comp. air and 6 Elec mach.
PP—8 boilers, total 1675 H. P., 2 compressors, and 2 pumps, gen. unit 250 volts D. C.
EMP—761. Last fiscal year output 741,354 tons.

Claridge Mine; Drift; Pittsburgh Seam, 77 to 82 in. thick.
PO—Darragh, Pa.; SP—Claridge, Pa.; CTY—Westmoreland; RR—P. R. R., Manor Br.
MS—G. M. Brinker.....Claridge, Pa.
S of H—Rope and mules; track gauge 40 in.
S of M—Hand.
PP—6 boilers, total 700 H. P., and 5 pumps.
EMP—177. Last fiscal year output 151,492 tons.

Keystone Mine; Shaft; Pittsburgh Seam, 72 to 86 in. thick.
PO—Darragh, Pa.; SP—Madison Station, Pa.; CTY—Westmoreland; RR—P. R. R., Hempfield Br.
MS—H. T. Knight.....Darragh, Pa.
SM—Wm. M. Duff.....Greensburg, Pa.
S of H—5 Elec. and 1 Gasoline loco.; track gauge 40 in.
S of M—Hand and 9 Elec. mach.
PP—2 Water tube boilers, total 600 H. P., 2 gen. units 250 volts D. C., 3 pumps. Purchase power.
EMP—543. Last fiscal year output 443,094 tons.

Carbon Mine; Slope; Pittsburgh Seam, 82 to 88 in. thick.
PO—Greensburg, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—Henry Welty.....Greensburg, Pa.
S of H—3 Comp. air loco., mules and rope; track gauge 40 in.
S of M—Hand.
PP—4 Return tubular boilers, total 475 H. P., and 3 pumps.
EMP—22. Last fiscal year output 29,108 tons. Coke ovens, 59 Bee Hive.

Greensburg No. 1 Mine; Slope; Pittsburgh Seam; 76 to 84 in. thick.
PO—Greensburg, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Southwest Br.
MS—A. W. White.....Greensburg, Pa.
SM—Wm. M. Duff, " "
S of H—2 Elec. loco., rope and mules; track gauge 40 in.
S of M—Hand.
EMP—60. Last fiscal year output 68,611 tons.

Greensburg No. 2 Mine; Slope; Pittsburgh Seam, 83 to 90 in. thick.
PO—Greensburg, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—H. H. Null.....Greensburg, Pa.
S of H—Rope, 5 Comp. air and 2 Steam loco.; track gauge 40 in.
S of M—Hand and 5 Comp. air mach.
PP—4 boilers, total 500 H. P., 2 compressors.
EMP—224. Last fiscal year output 220,910 tons.

Greensburg No. 3 Mine; Slope; Pittsburgh Seam, 76 to 84 in. thick.
PO—Greensburg, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Radebaugh Br.
MS—A. W. White.....Greensburg, Pa.
S of H—Rope and mules; track gauge 40 in.
S of M—Hand.
PP—1 Return tubular boiler, total 125 H. P., and 1 pump.
EMP—104. Last fiscal year output 93,151 tons.

Hempfield Nos. 1, 2, and 3 Mines; Drifts; Pittsburgh Seam, 80 to 86 in. thick.
PO—Greensburg, Pa.; SP—Same—CTY—Westmoreland; RR—P. R. R.
MS—W. E. Henderson...Greensburg, Pa.
SM—Wm. M. Duff, " "
S of H—Rope and 2 Elec. loco.; track gauge 40 in.
S of M—Hand.
PP—6 Return tubular boilers, total 750 H. P., 3 compressors and 12 pumps.
EMP—180. Last fiscal year output 193,964 tons.

Salem Mine; Drift; Pittsburgh Seam, 78 to 104 in. thick. Operate Washery.
PO—New Alexandria, Pa.; SP—Allsworth, Pa.; CTY—Westmoreland; RR—P. R. R., New Alexandria Br.
MS—E. C. Taylor..New Alexandria, Pa.
SM—Wm. M. Duff.....Greensburg, Pa.
S of H—Mules and 4 Comp. air loco.; trick gauge 40 in.
S of M—7 Comp. air mach.
PP—8 boilers, total 2,400 H. P., 2 gen. units 250 volts D. C., 3 compressors, 8 pumps.
EMP—320.

Huron Nos. 1, 2, and 3 Mines; Drifts; Pittsburgh Seam, 78 to 104 in. thick. Operate washery.
PO—New Alexandria, Pa.; SP—Dundale, Pa.; CTY—Westmoreland; RR—P. R. R., New Alexandria Br.
MS—E. C. Taylor...New Alexandria, Pa.
SM—Wm. M. Duff.....Greensburg, Pa.
S of H—Mules and 4 Comp. air loco.; track gauge 40 in.
S of M—Hand.
PP—3 compressors.
EMP—125. Last fiscal year output (for Salem and Huron Mines), 626,720 tons. Coke Ovens at Huron and Salem Mines, 281 Bee Hive and 100 Rectangular.

Seaboard Mine; Shaft; Pittsburgh Seam, 82 to 88 in. thick.
PO—Greensburg, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Radebaugh Br.
MS—Henry Welty.....Greensburg, Pa.
S of H—Mules; track gauge 40 in.
S of M—Hand.
PP—6 boilers, total 1450 H. P., 6 compressors and 9 pumps.
EMP—22. Last fiscal year output 20,782 tons. Total coke ovens, 451.

KEYSTONE MINING CO.
General Office, East Brady, Pa.
PR—Geo. E. Henry..East Brady, Pa.
GM—Geo. E. Henry, " "
GS—Geo. E. Henry, " "
PA—Geo. E. Henry, " "
TR—Chas. C. Henry, " "
EM—S. T. Mortimore, Lawsonham, Pa.
MM—J. S. Steel....East Brady, Pa.
Sales Agent, George E. Henry, East Brady, Pa.

Sarah Furnace No. 1 Mine; Drift, L. Kittanning Seam 4ft. thick.
PO—East Brady, Pa.; SP—Keystone Store, Pa.; CTY—Clarion.
RR—P.R.R.
MS—Peter Henry.....East Brady, Pa.
S of H—1 Elec. loco. and mules, track gauge 36 in.
S of M—5 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit 100 K. W., 250 volts D. C., 1 compressor and 3 pumps.
EMP—105. Last fiscal year output 115,500 tons.

Sterling No. 3 Mine, Drift, L. Kittanning Seam 44-48 in. thick.
PO—East Brady, Pa.; SP—Lawsonham, Pa., CTY—Clarion.
RR—P.R.R.
MS—Peter Henry.....East Brady, Pa.
S of H—1 Elec. loco. and mules, track gauge 32 in.
S of M—4 Elec. mach.
PP—Gas engine 150 H.P., 1 gen. unit 100 K. W., 250 D.C., 1 pump.
EMP—110. Last fiscal year output 106,059 tons.

KISKIMENTAS COAL CO.
General Office, Blairsville, Pa.
PR—T. L. Eyre.....West Chester, Pa.
TR—W. P. Graff.....Blairsville, Pa.
GM—F. M. Graff, " "
PA—F. M. Graff, " "
GS—Ernest Fletcher.....Saltsburg, Pa.
CE—Albert Smith .....Saltsburg, Pa.
MM—Chancy Shipley " "
EE—H. A. Scott, " "
SCO—Kiskimentas Supply Co., Buyer, Wm. G. Fletcher, Blairsville, Pa.
Sales Agent, Knickerbocker Fuel Co., New York, N. Y.

Tunnelton Mine; Drift; "E" Seam, 3 ft. thick.
PO—Tunnelton, Pa.; SP—Same CTY—Indiana; RR—P. R. R., Conemaugh Div.
SM—S. R. Devore.....Tunnelton, Pa.
S of H—2 Elec. loco., track gauge 36 in.
S of M—7 Elec. mach.
PP—2 Erie return tubular boilers, total 300 H. P., 1-100, 1-150 K. W., 250 volts D. C., 3 pumps.
EMP—123. Last fiscal year output 61,680 tons.

Brush Valley Mine; Drift; "B" Seam, 46 in. thick.
PO—Armagh, Pa.; SP—Scott Glen, Pa.; CTY—Indiana. RR—P. R. R., Clearfield & Cresson Div
SM—M. J. Guldin.....Armaugh, Pa.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—Hand.
PP—2 Erie Return tubular boilers, 300 H. P., 2 gen. units, 150 K. W., 250 volts D. C., 6 pumps.
EMP—140. Last fiscal year output 117,601 tons.

KITTANNING PLATE GLASS CO.
In bankruptcy.

KNICKERBOCKER SMOKELESS COAL CO.
PR—F. M. Graff.....Blairsville, Pa.
TR—W. P. Graff, " "
GM—Telford Lewis....Hooversville, Pa.
PA—Telford Lewis, " "
GS—Norman Lewis, " "
EM—R. A. Suppes, " "
MM—W. E. Nevling, " "
EE—W. E. Nevling, " "
SCO—Hooversville Supply Co.
Buyer, C. L. Stewart, Hooversville, Pa.
Sales Agent, Knickerbocker Fuel Co., New York.

Knickerbocker No. 2, Drift, "B" Seam, 3 to 4 1-2 ft. thick.
PO—Hooversville, Pa., SP—Same, CTY—Somerset.
RR—Rockwood Branch, B & O.
MS—Norman Lewis...Hooversville, Pa.
S of H—3 Eec. loco., track gauge, 42 in.
S of M—Hand, and 3 elec. machines.
EMP—165. Last fiscal year output 151,614 tons.

Knickerbocker No. 3, Drift, "B" Seam, 3 to 4 1-2 ft. thick.
PO—Hooversville, Pa., SP—Same, CTY—Somerset.
RR—Rockwood Branch, B & O.
S of H—3 Elec. loco., track gauge 36 in.
S of M—Hand, and 1 elec. machine.
EMP—172. Last fiscal year output 159,513 tons.

KNOXDALE COAL & COKE CO.
Campbell Mine; Drift; Freeport Seam, 72 in. thick.
PO—Brookville, Pa.; SP—Knoxdale, Pa.; CTY—Jefferson; RR—P. S. & N.
PR—Dr. J. G. Steiner....Knoxdale, Pa.
TR—Joseph B. Henderson, Brookville, Pa.
GM—Ira J. Campbell, " "
PA—Ira J. Campbell, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—30. Last fiscal year output 35,000 tons.

LaBELLE COKE CO.
General Office, Steubenville, O.
LaBelle Mine, Drift, Connellsville Seam, 9 ft. thick, operate washery.
PO—LaBelle Pa.; SP—Same; CTY—Fayette. RR—Monongahela.
PR—R. C. Crawford....Steubenville, O.
TR—R. C. Kirk, " "
GM—G. B. LaVan, " "
GS—R. W. McCasland, " "
PA—R. M. Rice, " "
EM—R. C. Gibson, " "
MM—Lynn Ridenour, " "
MS—Alex. Peterson .....LaBelle, Pa.
SM—J. H. Johnson " "
SCO—Luzerne Merc. Co., Steubenville, O.; Buyer, R. M. Rice, Steubenville, O.
S of H—Mules and 2 Elec. loco., track gauge 44 in.
S of M—6 Elec. mach. and hand.
PP—2 Scotch Marine water tube boilers, total 400 H. P., 2 gen. units, 250 volts, D. C., 1 Pump.
EMP—200. Coke ovens, 200 Bee Hive.

LACKAWANNA COAL & COKE CO.
General Office, Lackawanna, N. Y.
No. 4 Mine, Shaft, Miller B. Seam, 3 ft. 10 in. thick. Operate washery.
PO—Wehrum, Pa. SP—Same. CTY—, Indiana. RR—P. R. R., Cresson Division.
PR—E. A. S. Clark. No. 2 Rector St. New York, N. Y.
TR—J. P. Higginson, Lackawanna, NY.
VP—C. H. McCullough, Jr. " "
GM—C. H. McCullough, Jr. " "
PA—F. H. Burnett, " "
EM—W. A. James, " "
Asst GM—W. A. Luce....Pittsburgh, Pa.
SCO—Wehrum Supply Co. Buyer, W. J. Reitz, Ellsworth, Pa.
MS—F. B. Dunbar, ... Wehrum, Pa.
SM—W. H. Beck, " "
S of H—10 elec. locos. Track gauge 36 in.
S of M—Hand and 11 elec. and 44 comp. air machines.
PP—8 Cahall and 1 Rust water tube boilers, total 2,400 H. P., 3 gen. units, 250 volts D. C.
EMP—425. Last fiscal year output 354,000 tons.

LACOLLE COAL CO.
Lacolle Mine No. 1, Drift, Upper Freeport or "E" Seam 48 to 62 in.
PO—Bolivar, Pa.; SP—Same; CTY—Westmoreland.
RR—P.R.R.
PR—H. S. Ackerman..Greensburg, Pa.
TR—Albert H. Bell, " "
GM—Wm. S. Byers.....Boliver, Pa.
PA—Wm. S. Byers, " "
GS—John MacPherson, " "
S of H—2Jeffrey loco.; track gauge 42 in.
S of M—Hand and Elec. Mach.
PP—2 Return Tubular Boilers, total 300 H. P., 1 Gen. Unit, 250 D. C. volts.

LADYSMITH COAL MINING CO.
PO—Houtzdale, Pa.; CTY—Clearfield; RR—P. R. R.
PR—Harry Boulton.....Houtzdale, Pa.
GM—Harry Boulton, " "
TR—John Benson, " "
S of H—Elec .loco.
PP—Power purchased.

LAKE SHORE GAS COAL CO.
PR—C. H. Wisser....McKeesport, Pa.
TR—C. H. Wisser, " "
GM—F. E. Wisser..Buena Vista, Pa.
GS—F. R. Wisser, " "
PA—F. R. Wisser, " "
MM—F. R. Wisser, " "
EM—J. R. Romine..McKeesport, Pa.

Dravo Mine, Drift, Pittsburgh, Seam, 5½ to 6½ ft. thick.
PO—Buena Vista, Pa.; SP—Dravo Station, Pa.; CTY—Allegheny; RR—P. & L.E. RR.

S of H—Mules and 1 elec. loco.; track gauge 44 in.
S of M—2 Elec. machines.
PP—1 Erie Return Tubular Boiler, 100 H. P., 1 gen. unit, 500 volts D.C.
EMP—52. Last fiscal year output 28,000 tons.

LANE COAL CO. INC.
Lane Colliery No. 5, Drift.
PO—Philipsburg, Pa. SP—Munson Station, Pa. CTY—Center. RR—N. Y. C. & H. R.
GM—H. W. Todd, ..Philipsburg, Pa.
PA—H. W. Todd, " "
MS—Daniel Milsom, ... Allenport, "
EMP—60. Last fiscal year output 45,069 tons.

LANGDON, JOHN
General Office, Huntingdon, Pa.
PR—John Langdon....Huntingdon, Pa.
TR—John Langdon, " "
GM—Chester J. Langdon, Hopewell, Pa.
GS—Chester J. Langdon " "
PA—Chester J. Langdon, " "
EM—Chester J. Langdon, " "
SCO—Glendale Supply Co., Buyer, Ralph G. McIntyre, Six Mile Run, Pa.

Cambria No. 1 and Chevington No. 3, Drift; Barnett Twin Seam, 30 to 36 in. thick.
PO—Hopewell, Pa.; SP—Same; CTY—Bedford; RR—H. & B.T.M.; Sandy Run Branch.
MS—John Himes .....Hopewell, Pa.
S of H—Mules; track gauge 38 in.
S of M—Hand.
EMP—9. Last fiscal year output, 4,790 tons.

Glendale Nos. 1 and 2 Mines, Drift and Slope; Barnett Seam, 30 to 36 in. thick.
PO—Hopewell Pa.; SP—Same; CTY—Bedford; RR—H. & B. T. M., Sandy Run Branch.
MS—John Himes .....Hopewell, Pa.
S of H—Mules and rope; track gauge 38 in.
S of M—Hand.
PP—1 Return tubular boiler, 60 H. P., and 1 pump.
EMP—14. Last fiscal year output, 4,907 tons.

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Cambria No. 2 Mine, Slope, Kelly Seam, 3 to 5 ft. thick.
PO—Hopewell, Pa.; SP—Same; CTY—Bedford; RR—H. & B. T. M., Sandy Run Branch.
MS—John Himes.....Hopewell, Pa.
S of H—Mules and rope. Track gauge 38 in.
S of M—Hand.
PP—1 Boiler, 80 H. P., 3 engines, 1 pump.
EMP—92. Last fiscal year output 67,180 tons.

Glendale Nos. 3 and 4 Mines; Slopes; Kelly and Barnett Seams, 30 to 60 in thick.
PO—Six Mile Run, Pa.; SP—Coaldale; Pa.; CTY—Bedford; RR—H. & B. T.M., Six Mile Run Branch.
MS—John McIntyre, Six Mile Run, Pa.
S of H—Mules and rope; track gauge 38 in.
S of M—Hand.
PP—2 Return tubular boilers, total 140 H.P., 3 engines, 1 pump.
EMP—16. Last fiscal year output 6,400 tons.

Chevington No. 4 Mine, Drift, Kelly Seam, 3½ to 5 ft. thick.
PO—Hopewell, Pa.; SP—Same; CTY—Bedford; RR—H. & B.T.M., Sandy Run Branch.
MS—John Himes.....Hopewell, Pa.
S of H—Mules and gravity; track gauge 38 in.
S of M—Hand.
EMP—9. Last fiscal year output 12,421 tons.

LANDSBERRY COAL CO.
Landsberry Nos. 2 and 3 Mines; Drifts; "A" Seam, 48 to 60 in. thick.
PO—Woodland, Pa.; SP—Same; CTY—Clearfield, RR—N. Y. C.
GM—A. B. Landsberry....Woodland, Pa.
GS—A. B. Landsberry, " "
PA—A. B. Landsberry, " "
MS—J. Fred. Herbert, " "
SCO—Bradford Supply Co., Buyer A. B. Lansberry, Woodland, Pa.
S of H—1 Elec. and 1 Steam loco.; track gauge 36 in.
S of M—Hand.
PP—2 Water tube boilers.
EMP—25. Last fiscal year output 16,000 tons.
Sales Agent, Hatfield & Hilles, Altoona, Pa.

LATROBE COAL CO.
General Office, Altoona, Pa.
PR—Col Richard Coulter..Greensburg, Pa.
TR—John L. Lloyd.....Altoona, Pa.
GM—John L. Lloyd, .. Altoona, Pa.
EM—J. S. Sillyman & Co., Altoona, Pa.
SCO—Henrietta Supply Co. Buyer, W. D. Canan, Altoona, Pa.

Latrobe No. 1 Mine, Slope, Pgh. Seam. 84 to 90 in. thick.
PO—Latrobe, Pa. SP—Same. CTY — Westmoreland. RR—P. R. R.
MS—D. W. Jones, ... Latrobe, Pa.
S of H—1 steam loco.
S of M—Hand.
PP—7 return tubular boilers, total 745 H. P., 7 pumps.
EMP—143. Last fiscal year output 126,656 tons.

Latrobe No. 2 Mine. Slope, Pgh. Seam. 66 to 84 in. thick.
PO—Blairsville, Pa. SP—Hillside, Pa. CTY—Indiana. RR—P. R. R.
MS—D. W. Jones, ... Latrobe, Pa.
S of H—Rope and mules.
S of M—Hand.
PP—5 Return tubular boilers, total 600 H. P., 2 pumps.
EMP—176. Last fiscal year output 189,247 tons.

LATROBE CONNELLSVILLE COAL & COKE CO.
General Office, Greensburg, Pa.
PR—J. B. Huff.....Greensburg, Pa.
GM—A. N. Pershing, " "
PA—A. N. Pershing, " "
CE—Robert Morris, " "
TR—Joseph E. Barnett.....Latrobe, Pa.
GS—Edw. Soppitt, " "
EM—Leo. C. Gibson, " "

Saxman Mine, Shaft, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Latrobe, Pa.; SP—Same: CTY—Westmoreland; RR—P.R.R.
MS—E. M. Saxman.....Latrobe, Pa.
S of H—1 Elec. loco.; track gauge 40 in.
S of M—Pick.
PP—6 Return tubular boilers, total 420 H.P., 2 gen. units, 500 and 110 volts A.C.
EMP—150. Coke ovens, 80 Bee Hive. Last fiscal year output 112,145 tons.

Superior No. 1, Shaft, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Latrobe, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R.
MS—E. M. Saxman.....Latrobe, Pa.
SM—J. E. Heck, " "
S of M—Pick.
S of H—1 Elec. loco.; track gauge 40 in.
PP—2 Return tubular boilers, total 200 H.P., 1 gen. unit, 500 volts A.C.
Coke ovens, 71 Bee Hive. Last fiscal year output 56,827 tons.

Derry No. 1, Shaft, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Bradenville, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R.
MS—W. N. Rigg.....Bradenville, Pa.
SM—J. E. Heck.....Latrobe, Pa.
S of H—3 Elec. loco.; track gauge 40 in.
S of M—Pick.
PP—6 Return tubular boilers, total 600 H.P., 6 pumps; also buy power.
EMP—550. Last fiscal year output 214,272 tons.

Derry No. 2, Shaft, Pittsburgh Seam, 7½ ft. thick.
PO—Bradenville, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R.
MS—W. N. Rigg.....Bradenville, Pa.
SM—J. E. Heck.....Latrobe, Pa.
S of H—Mules; track gauge 40 in.
S of M—Pick.
PP—3 Return tubular boilers, total 450 H.P., 4 pumps.
50 Bee Hive coke ovens.

Connellsville Mine, Slope, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Superior, Pa.; SP—Bradenville, Pa.; CTY—Westmoreland; RR—P.R.R.
MS—Andrew Smith .....Superior, Pa.
SM—J. E. Heck.....Latrobe, Pa.
S of H—Rope and 4 gasoline motors; track gauge 40 in.
S of M—Pick.
PP—4 Return tubular boilers, total 400 H.P., 1 compressor.
EMP—550. Coke Ovens, 208 Bee Hive. Last fiscal year output 258,451 tons.

Superior No. 2, Drift, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Superior, Pa.; SP—Bradenville, Pa.; CTY—Westmoreland; RR—P.R.R.
MS—Andrew Smith .....Superior, Pa.
SM—J. E. Heck.....Latrobe, Pa.
S of H—1 Gasoline motor; track gauge 40 in.
S of M—Pick.
EMP—100. Last fiscal year output 15,368 tons.

Millwood Mine, Shaft, Pittsburgh Seam 7 to 9 ft. thick.
PO—Blairsville, Pa.; SP—Millwood, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—John Christner, R. F. D., Blairsville, Pa.
SM—J. E. Heck.....Latrobe, Pa.
S of H—2 Comp. air loco. and mules; track gauge 40 in.
S of M—Pick and comp. air machines.
PP—1 Water tube and 5 return tubular boilers, total 700 H.P., 2 air compressors and 2 pumps.
EMP—200. Last fiscal year output 15,008 tons.

LATROBE-CRESSON COAL CO.
Island Mine; Shaft; Pgh. Seam, 84 to 108 in. thick.
PO—Latrobe, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
PR—James Quinn, ...Latrobe, Pa.
GS—James Quinn, " "
TR—M. J. Hines " "
MS—John Bush, " "
CE—W. H. Matthews, Ligonier, Pa.
S of H—Mules.
S of M—Hand.
PP—2 Water tube boilers, total 70 H.P., 2 pumps.
EMP—15. Last fiscal year output 6,261 tons.

LEAHEY COAL MINING CO.
See Shoemaker Coal Mining Co.

LEE, THOMAS J.
Chester Mine, Drift Mine, "B" Seam 4 ft. thick.
PO—Phillipsburg, Pa. SP—Hawk Run, Pa. CTY—Centre. RR—N. Y. C. Onbir Branch.
GM—Thos. J. Lee, Philipsburg, Pa.
GS—Thos. J. Lee, " "
PA—Thos. J. Lee, " "
EM—George H. Ayers, " "
MS—Harry Crago, Jr., Philipsburg, Pa.
S of H—Rope and mules, track gauge, 3 ft.
S of M—Hand and 2 elec. mach.
PP—2 Return tubular boilers total 150 H. P.; also purchase power; 2 Cameron No. 10 pumps.
EMP—60. Last fiscal year output 60,000.

LEESBURG COAL CO (THE)
Leesburg Mine, Slope, Brookville Seam 3 1-3 to 4 ft. thick.
PO—Volant, Pa., R.D.; SP—Drake, Pa.; CTY—Mercer.
RR—P.R.R., Wolf Creek Branch.
PR—S. A. Richards....Struthers, O.
TR—J. A. Gealey....New Castle, Pa.
GM—J. A. Gealey, " "
PA—J. A. Gealey, " "
GS—M. F. Crawford, R.D. No. 2 Volant, Pa.
MM—Adam Hedrick.....Volant, Pa
MS—Thos. Wardle.....Volant, Pa
S of H—Mules and rope.
S of M—Hand.
PP—2 Return tubular boilers total 250 H. P.; 2 engines and 2 pumps.
EMP—87. Last fiscal year output, 60,601 tons.
Sales Agent J. A. Gealey, New Castle, Pa.

LEECHBURG COAL & COKE CO.
Riverview Mine, Drift.
PO—Leechburg, Pa. SP—Same. CTY—Armstrong. RR—P. R. R.
GM—L. W. Hicks, .. Leechburg, Pa.
MS—Wm. Gibson, " "
EM—E. A. Watters, " "
S of H—1 elec. loco.
S of M—6 elec. and 1 comp. air machine.
PP—3 return tubular boilers, total 450 H. P., 1 gen. unit, 250 volts D. C., 1 air comp., 3 pumps.
EMP—81. Last fiscal year output 86,441 tons.

LEHIGH VALLEY COAL CO.
General Office, Wilkes-Barre, Pa.
Nos. 9, 10, 12, 13, 18, 20, 22 and 23 Mines.
CTY—Centre.
PA—Mr. McQuade, 50 Church St., New York, N. Y.
GM—F .M. Chase....Wilkes-Barre, Pa.
GS—Thos. Thomas, " "
EM—John Humphrey, " "
MM—Paul Sterling, " "
Efficiency Eng—John Lloyd, " "

LEISENRING, M. J.
Out of business.

LELAND COAL MINING CO.
General Office, 12 Broadway, New York.
Leland Mine; Drift; "D" or Moshannon Seam
PO—Utahville, Pa.; R. F. D.; SP—Smoke Run, Pa.; RR—Penna.; CTY—Clearfield.
PR—Geo. M. Dexter, 12 Broadway, New York.
GM—Geo. M. Dexter, 12 Broadway, New York.
TR—W. H. Carpenter, 12 Broadway, New York.
PA—W. H. Carpenter, 12 Broadway, New York.
GS—Jas. J. McCann....Lloydell, Pa.
MS—Ed. Casker....Smoke Run, Pa.
S of H—Gasoline loco and mules.
S of M—Hand.
EMP—225. Last fiscal year output, 160,000 tons.
Sales Agency, Dexter & Carpenter, 12 Broadway, New York, N. Y.
Successors to Cambria Coal Mining Co.

LENOX COAL CO.
General Office, Hastings, Pa.
Lenox Mine No. 1; "E" and "D" Seam; 40 to 44 in. thick.
PO—Hastings, Pa.; SP—Barnesboro, Pa.; CTY—Cambria; RR—P. R. R., Susquehanna Div.
PR—John C. Cosgrove....Johnstown, Pa.
GM—John C. Cosgrove, " "
PA—John C. Cosgrove, " "
TR—B. R. Lloyd.....Hastings, Pa.
MS—John McCormick.....Spangler, Pa.
EM—Chas. Schlicher.....Spangler, Pa.
EF—L. O. Gregg.....Johnstown, Pa
SM—Thos. Kerr.....Barnesboro, Pa.
S of H—1 Elec. loco., track gauge 36 in.
S of M—5 Elec. mach
PP—1 gen. unit, 2300 volts D. C. Purchase power.
EMP—73. Last fiscal year output, 71,003 tons.
Sales Agent, Robert C. Lea & Co., Philadelphia, Pa.

LESKIE COAL MINING CO.
Leskie No. 1 Mine; Drift; Moshannon A. Seam, 48 to 72 in. thick.
PO—Osceola Mills, Pa. SP—Same; CTY—Clearfield; RR—P. R. R.
TR—Thos. Dugan, Sr...Osceola Mills, Pa.
MS—Thos. Dugan, Sr., " "
GM—James F. Dugan, " "
PA—James F. Dugan, " "
SM—James F. Dugan, " "
S of H—Mules.
S of M—Hand.
EMP—20.
Sales Agents, Chas. W. Mills and Swayne & Co., Land Title Bldg., Philadelphia, Pa.

LEWIS COAL CO
Now Hammill Smokeless Coal Co.

LIDALIA COAL CO.
General Office, Park Bldg., Pittsburgh, Pa.
Drift Mine.
PO—Harrisville, Pa. SP—Same. CTY—Somerset. RR—B. & O.
PR—W. McK Reed, .. Pittsburgh, Pa.
GM—B. S. Hammill, " "
PA—C. C. McGregor, Harrisville, "
EM—C. C. McGregor, " "
MS—C. C. McGregor, " "
SM—C. C. McGregor, " "
S of H—Elec. locomotives
S of M—Elec. machines
PP—Boilers, total 250 H. P., gen. unit 100 K. W.
EMP—60. Last fiscal year output 40,000 tons.

LIGONIER COAL CO
Ligonier No. 2 Mine, Shaft; Pittsburgh Seam; 7 to 9 ft. thick.
PO—Derry, Pa.; SP—Same; CTY—Westmoreland. RR—P.R.R.
PR—M. W. Saxman.....Latrobe, Pa.
GM—M. W. Saxman, " "
TR—Jos. E. Barrett, " "
GS—Edward Soppitt, " "
PA—H. C. Buterbaugh, " "
MS—Henry O'Neill .....Derry, Pa.
S of H—1 Elec. loco.
S of M—Hand. Coke ovens, 50 Bee Hive.

LILLEY COAL & COKE CO.
Lilley Mine; Slope; Pittsburgh Seam, 96 in. thick.
PO—So. Brownsville, Pa.; SP—West Brownsville, Pa.; CTY—Fayette; RR—P. R. R., Monongahei Div.
PR—Thomas Lilley.
TR—John H. Moffitt, ..Charleroi, Pa.
GM—Thos. Elliott, So. Brownsville, Pa.
PA—Thos. Elliott, " "
EM—Fred C. Hunter, " "
CE—Harrop, Hopkins & Taylor, Pittsburgh, Pa.
MS—Wm. Higginson, ..California, Pa.
MM—Sam Moyer, " "
S of H—1 Elec. loco; track gauge 44 in.
S of M—4 Elec. mach.
PP—2 Wickes water tube boilers, total 500 H.P.; gen. unit 250 volts D.C., 3 pumps.
EMP—150. Last fiscal year output 74,000 tons.
Sales Agency, J. B. Hillman & Sons Co., Pittsburgh, Pa.

LILLY COAL CO.
General Office, Altoona, Pa.
Lilly Mine Nos. 2 and 3; Drift and slope; B Seam, 42 to 36 in thick.
PO—Lilly, Pa.; SP—Same—CTY—Cambria.
RR—P.R.R.
Receiver, Wm. Hahman, Altoona, Pa.
GM—Wm. Hahman .....Altoona, Pa.
PA—Wm. Hahman, " "
MS—W. F. Richards.....Lilly, Pa.
SCO—Keystone Mdse. Co., Buyer H. H. Brady, Lilly, Pa.
S of H—2 Elec. loco., mules and rope; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 600 H. P.; 2 gen. units 250 volts, D. C., 1 pump.
EMP—125. Last fiscal year output, 80,000 tons.

LINCOLN COAL CO.
General Office, 1 Broadway, New York City.
Lincoln Mine, Drift, Miller or Lower Kittanning Seam; 40 to 48 in. thick.
PO—Nant-Y-Glo, Pa., SP—Same, CTY—Cambria; RR—P. R. R., C. & C. Br.
PR—W. A. Marshall, 1 Broadway, New York.
TR—F.A. Potts, 143 Liberty St., N.Y.
GM—W. A. Marshall, 143 Liberty St., New York, N. Y.
PA—J. E. Burns....Nant-Y-1Glo., Pa.
GS—J. E. Burns, " "
SM—E. E. Davis, " "
S of H—4 Elec. loco., track gauge 3 ft.
S of M—9 Elec. mach.
PP—2 Return tubular boilers, total 300 H.P., 2 Gen. units, 250 volts, D. C., 1 pump.
EMP—225. Last fiscal year output, 173,622 tons.
Sales Agents, W. A. Marshall & Co. 1, Broadway, New York.

LINCOLN COAL & COKE CO.
General Office, Scottdale, Pa.
Lincoln Mine, Slope, Pgh. Seam 9 ft. thick.
PO—Waltersburg, Pa.; SP—Helen, Pa.; CTY—Fayette. RR—P. V. & C., Keister Branch.
PR—A. L. Keister.....Scottdale, Pa.
TR—B.F. Keister, " "
GM—E.L. Stoner, " "
GS—E. L. Stoner, " "
PA—E. L. Stoner, " "
MS—B. B. Leichliter, Waltersburg, Pa.
MM—Calvin Lehman, " "
CE—Geo. S. Baton & Co., Pgh., Pa.

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LINCOLN COAL & COKE CO.—Continued
SCO—F. O. Keist.r & Co., Waltersburg. Pa.; Buyer, J. W. Davis.
S of H—Mules, Rope and 2 Comp. Air and 2 steam locos., track gauge 44 in.
S of M—Hand and 5 Comp. air mach.
PP—3 Water tube and 2 return tubular boilers, total 1200 H. P., 3 gen. units, 3 compressors and 2 pumps.
EMP—400. Last fiscal year output, 336,000 tons.
Coke ovens—400 Bee Hive.
Sales Agent, E. W. Mudge & Co., Pgh., Pa.

LINDSEY COAL MINING CO.
Nos. 5 and 8 mines; Drifts; Up. Freeport Seam, 3 ft. 10 in. to 7 ft. thick
PO—Punxsutawney, Pa.; SP—Same; CTY Jefferson; RR—P.R.R., Bellwood Dit.
PR—A. L. Light....Punxsutawney. Pa.
TR—Jacob L. Fisher, " "
GM—John Jacob Fisher, " "
PA—John Jacob Fisher, " "
MS—John Jacob Fisher, " "
S of H—Mules; gauge of track No. 5, 36 in. and No. 8, 42 in.
S of M—6 Comp. air mach. and hand.
PP—2 Erie City, return tubular boilers, total 225 H P., 1 comp. Last fiscal year output 30,000 tons.
Sales Agent, Weston Dodson & Co., Bethlehem, Pa.

LISTONBURG COAL MINING CO.
General Office, Meyersdale, Pa.
Miller Mine, Slope, C. Prime Seam.
PO—Listonburg, Pa. SP—Same. CTY—Somerset.
GM—J. W. Endsley.. Listonburg, Pa.
S of H—Rope and mules.
S of M—3 Comp. air machines.
PP—2 boilers, total 225 H. P., 1 air Compressor, 2 pumps.
EMP—51. Last fiscal year output 35,860 tons. State report.

LIVERIGHT, HENRY.
Reliance Mine, Drift; "B" Seam, 3 ft. 4 in. to 4½ ft. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield. RR—P.R.R.
GM—Henry Liverright, Oceola Mills,Pa.
PA—Henry Liveright, " "
MS—Aaron Crain.....Houtzdale, P.
S of H—Mules.
S of M—Hand.
EMP—45. Output from June to Jan 1st, 1914, 18,200 tons.

LLOYDELL COAL MNG. CO.
See Dexter & Carpenter, Inc.

LOBB & ANDREWS.
Eleanor Nos. 1 and 2 Mines; Drifts; Moshannon Seam, 36 in. thick.
PO—Brisbin, Pa.; SP—Smoke Run, Pa.; CTY—Clearfield; RR—P. R. R., Smoke Run Br.
PR—Thomas Lobb.....Brisbin, Pa.
GS—Thomas Lobb, " "
GM—Jonathan Andrews, " "
MS—Thos. Wynn.....Ramey, Pa.
S of H—Mules; track gauge, 36 in.
S of M—Hand.
EMP—35. Output, 100 tons daily.
Sales Agency, Gorman-Leonard, Brisbin, Pa.

LOCHRIE BROS. COAL CO.
General Office, Windber, Pa.
Penna. No. 1 Mine, Drift.
PO—Argentine, Pa. SP—Same. CTY—Butler. RR—B. & L. E.
GM—Thos. Lochrie, .. Argentine, Pa.
PA—Thos. Lochrie, " "
MS—T. MacTavish, " "
S of H—Rope and mules.
S of M—6 Comp. air machines.
PP—2 return tubular boilers, total 250 H. P., 1 air comp., 2 pumps.
EMP—92. Last fiscal year output 95,000 tons.

LOCHRIE, HUGH, COAL MINING CO.
PO—Hilliards, Pa.; SP—Same; CTY—Butler; RR—B. & L. E.
GM—Hugh Lochrie, ...Hilliards, Pa.
S of H—Rope and mules.
S of M—2 Comp. air mach.
PP—2 Boilers 250 H.P.; 1 compressor.
Note—Successors to the Industrial Coal Company of Pittsburgh.

LOEB, H.
General Office, 33d & Master Sts., Philadelphia, Pa.
Cherry Grove, Mine; Drift; Upper Freeport Seam 3 to 4 ft. thick.
PO—Big Run, Pa., R.F.D.No.2; SP—Winslow, Pa.; CTY—Jefferson.
RR—P.R.R.
GM—H. Loeb.....Philadelphia, Pa.
GS—H. Loeb, " "
PA—H. Loeb, " "
S of H—Mules, track gauge 38 in.
S of M—Hand and 3 comp. air mach.
PP—1 Return tubular boiler 75 H.P.; 1 compressor.
Note—Did not operate in 1913 or 1914.
Sales Agent, H. Loeb, 33d and Master Sts., Philadelphia.

LOGAN COAL CO.
General Office, Harrison Bldg., Phila., Pa.
PR—Wm. J. Faux.....Phila., Pa.
TR—Wm. J. Faux, " "
GS—A. Appleyard.....Beaverdale, Pa.
EM—A. B. Crichton....Johnstown, Pa.
SCO—Logan Valley Store Co., Buyer, H. W. Black, Beaverdale, Pa.
Sales Agent, Wm. J. Faux, Phila., Pa.

Logan No. 1 Mine, Slope; "B" Seam, 3 to 4 ft. thick.
PO—Dunlo, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
MS—P. Hart.....Dunlo, Pa.
SM—A. D. Mingle, " "
S of H—Elec. loco. and rope; track gauge 36 in.
S of M—Hand.
PP—1 Return tubular, Erie boiler, 80 H. P., 2 pumps.
EMP—97; Last fiscal year output 70,000 tons.

Logan No. 7 Mine; Drift; "E" Seam, 3 ft. to 3 ft. 6 in. thick.
PO—Dunlo, Pa.; SP—Same, CTY—Cambria. RR—P. R. R.
SM—A. D. Mingle.....Dunlo, Pa.
S of H—1 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular, Erie boilers, total 200 H. P., gen. unit 250 volts D. C., 1 pump
EMP—47. Last fiscal year output 35,000 tons.

Logan No. 4 Mine; Slope; "B" Seam, 3 to 4 ft. thick.
PO—Beaverdale, Pa.; SP—Lloydell, Pa.; CTY—Cambria; RR—P.R.R.
MS—Arthur Appleyard..Beaverdale, Pa.
SM—H. W. Black, " "
S of H—2 Elec. loco. and rope; track gauge 36 in.
S of M—Hand.
PP—8 Return tubular, Erie, boilers, total 900 H. P., 3 gen. units, 250 volts D. C., 2 air comp. and 2 pumps.
EMP—271. Last fiscal year output 250,000 tons.

Logan No. 2; Drift; "E" Seam, 3 ft. to 3 ft. 8 in. thick.
PO—Beaverdale, Pa.; SP—Lloydell, Pa.; CTY—Cambria; RR—P.R.R.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—1 Elec. mach. and hand.
PP—From No. 4 Mine.
EMP—132. Last fiscal year output 175,000 tons.

Logan No. 6½ Mine, Slope; "D" Seam, 44 to 50 in. thick.
PO—Beaverdale, Pa.; SP—Lloydell, Pa.; CTY—Cambria; RR—P.R.R.
SM—H. W. Black.....Beaverdale, Pa.
S of H—1 Elec. loco. and rope; track gauge 36 in.
S of M—1 Elec. 1 comp. air mach. and hand.
PP—3 Return tubular, boilers, total 240 H. P., 1 comp. and 1 pump.
EMP—55. Last fiscal year output 75,000 tons.

LOGAN SMOKELESS COAL CO.
Out of business.

LOGANSPORT COAL CO.
General Office, First National Bank Bldg., Pittsburgh, Pa.
Bethel Mine; Drift; Freeport Seam, 42 in. thick.
PO—Logansport, Pa.; SP—Same; CTY—Armstrong; RR—P. R. R., B. & A. V. Div.
PR—R. C. Masten, ..Pittsburgh, Pa.
TR—E. J. Frauenhein, Jr., " "
PA—H. L. Stewartson, " "
CE—John M. Rayburn, " "
GM—R. C. McLean, Logansport, Pa.
MS—Harry Turner, " "
S of H—1 Elec. loco.
S of M—4 Elec. mach.
PP—Power purchased.
EMP—60. Output 300 tons daily.
Sales Agency, Producers Fuel Co., Pittsburgh, Pa.

LOUDEN & PAGE.
Succeeded by Russett Coal Co.

LOUISE COAL CO.
General Office, Chambersburg, Pa.
Kelly, Rock Bar and Barnett Rock Bar Mines; Slope and Drift; "C" and Barnett Seams, 24 to 60 in. thick.
PO—Defiance, Pa.; SP—Riddlesburg, Pa.; CTY—Bedford; RR—H. & B. T., Six Mile Run Branch
TR—M. C. Stoner....Chambersburg, Pa.
PA—M. C. Stoner, " "
GM—J. F. Griffith, Broad Top City, Pa.
MS—M. V. Manley.....Defiance, Pa.
EE—Oscar Whited...Six Mile Run, Pa.
S of H—Mules; Track gauge 36 in.
S of M—Hand.
PP—1 gen. unit 220 volts A. C., 1 pump. Power purchased
EMP—39. Last fiscal year output 29,000 tons.

LOVE & PORTER COAL CO.
General Office, Connellsville, Pa.
Reese Mine; Drift; L. Kittanning Seam, 36 to 54 in. thick.
PO—Indian Head, Pa.; SP—Same; CTY—Fayette; RR—B. & O., Indian Creek Valley.
PR—Thos. Love, ...Everson, Pa.
GM—Thos. Love, " "
TR—Henry A. Porter, Connellsville, Pa.
S of H—Mules.
S of M—Hand.
Output at present 50 tons daily.

LOYAL HANNA COAL & COKE CO.
General Office, Philadelphia, Pa.
PR—John Pitcairn....Philadelphia, Pa.
VP—C. C. Watt, " "
TR—L. V. Biggs " "
ASST GM—C. M. Watt, " "
PA—C. M. Watt, " "

Loyal Hanna Mine Nos. 1 and 2 Shaft; Pgh. Seam; 7ft. thick.
PO—Loyal Hanna, Pa.; SP—Same; CTY—Westmoreland.
RR—P.R.R.
MS—Wm. Gray.....Loyal Hanna, Pa.
S of H—3 Elec. loco. and mules.
S of M—Hand.
PP—12 Return tubular boilers.

Loyal Hanna No. 3; Drift; L. Kittanning Seam 3 ft. 8 in. thick.
PO—Onnalinda, P. O., Pa.; Lloydell, Pa.; CTY—Cambria, RR—P.R.R., South Fork Branch.
MS—Joseph Patterson, Onnalinda, Pa.
S of H—5 Elec. loco. and mules track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers.

Loyal Hanna No. 6; Drift; L. Kittanning Seam 4 ft. 2 in. thick.
PO—Cairnbrook, Pa.; SP—Same; CTY—Somerset; RR—P. R. R.
MS—Joseph Patterson, Onnalinda, Pa.
Asst. MS—Arch Miller...Cairnbrook, Pa.
S of H—Elec. loco.; track gauge 36 in.
S of M—Elec.
PP—1 Return tubular boiler, also purchased power;

LOYALSOCK COAL CO.
Loyalsock No. 1 Mine; Drift; Seam 3 to 6 ft. thick.
PO—Forksville, Pa.; SP—New Albany, Pa.; CTY—Sullivan.
TR—Frank Overton, ...Towanda, Pa.
GM—G.C.MacFarlane, Barnum, W.Va.
GS—Chas. F. Bashore, Forksville, Pa.
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—1 Return tubular boiler.
Last fiscal year output, 2000 tons.

LUCESCO COAL CO.
General Office, Greensburg, Pa.
Lucesco Mine, Drift, Freeport Seam, 49 to 30 in. thick.
PO—Lucesco, SP—Kiskiminetas Junction, Pa., CTY—Westmoreland.
RR—Penna., Conemaugh Div.
PR—J. Howard Patton..Greensburg, Pa.
TR—L. B. Huff, " "
GS—Howard C. Patton, " "
PA—J. Howard Patton, " "
EM—Robt. Morris, " "
MS—George Weightman..Saltsburg, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Gen. units, 220 volts A. C., 3-phase, 120-cycle, 1 pump. Buy power.
EMP—78 Last fiscal year output 61,378.85 tons.
Sales Agents, Lucesco Coal Co., Greensburg, Pa.

LUZERNE COAL & COKE CO.
Geneal Office, Oliver Bldg., Pittsburg, Pa.
Luzerne Mine; Slope; Pgh. Seam, 62 to 98 in. thick.
PO—East Millsboro, Pa.; SP—Luzerne Siding, Pa.; CTY—Fayette; RR—Monon.
PR—H. A. Davis.....Pittsburg, Pa.
TR—J. H. Hillman, Jr., " "
GM—W. L. Affelder, " "
PA—J. A. Leithead, " "
MS—R. E. Kirk, East Millsboro, Pa.
SCO—Belle Vernon Mercantile Co., Belle Vernon, Pa.
EM—F. E. Gebhart, Masontown, Pa.
S of H—Mules (at present); track gauge, 42 in.
S of M—2 Elec. mach.
PP—Power purchased, gen. unit, 440 volts A. C., 3 phase, 60 cycles.
EMP—22. Last fiscal year output, 28,075 tons. Coke Ovens, 34 Bee Hive.
Sales Agency, J. H. Hillman & Sons Co., Pittsburg, Pa.

LYDICK COAL CO.
Lydick Mine; Drift; Lower Kittanning Seam; 36 to 48 in. thick.
PO—Indiana, Pa.; SP—Same; CTY—Indiana.
PR—T. B. Streams, ...Indiana, Pa.
TR—F. L. Neff, " "
PA—F. L. Neff.....Indiana, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—9. Last fiscal year output, 7865 tons.

LYNCH, B. J. & CO.
Moro Mine; Slope and drift; A and B Seam, 36 to 48 in. thick.
PO—Meyersdale, Pa.; SP—Shamrock, Pa.; CTY—Somerset; RR—B.& O. Somerset & Cambria Br.
PR—B. J. Lynch, ...Meyersdale, Pa.
TR—B. J. Lynch, " "
EM—B. J. Lynch, " "
S of H—Mules and rope.
S of M—8 Comp. air mach. and hand.
PP—2 Return tubular boilers, 1 compressor, 2 pumps.
EMP—26.

McANINCH & REINERT COAL CO.
Gotwold Mine; Drift; L. & Up. Kittanning Seam, 34 to 54 in. thick.
PO—Knoxdale, Pa.; SP—Same; CTY—Jefferson; RR—P. S. & N.
GM—W. J. McAninch, Knoxdale, Pa.
GS—W. J. McAninch, " "
PA—W. J. McAninch, " "
MS—Emanuel Reinert, " "
EM—A. L. Bouton, ...DuBois, Pa.
S of H—Mules.
S of M—Hand.
EMP—10. Output at present 1,500 tons.
Sales Agent, W. J. McAninch, Knoxdale, Pa.

McCLANE MINING CO.
Maud Mine, Slope, Pgh. Seam, 64 to 72 in. thick.
PO—Cuddy, Pa., SP—Treveskyn, CTY—Allegheny. RR—P. C. C. & St. L., B. & M. Branch.
PR—M. W. McClane, Bridgeville, Pa.
GM—M. W. McClane, Bridgeville, Pa.
PA—M. W. McClane, Bridgeville, Pa.
TR—Robt. L. McCarrell, Washington, Pa.
MS—A. McLean, Bridgeville, Pa.
EM—W. H. McClane, Cuddy, Pa.
MM—Howard Phillips.....Cuddy, Pa.
EE—August Hageter, " "
SCO—Vulcan Supply Co., Buyer, F. D. McFarland, Cuddy, Pa.
S of H—Mules and 2 Elec. Locomotives; track gauge, 40 in.
S of M—11 Elec. mach.
PP—Purchase Power.
EMP—250. Last fiscal year output, 218,000 tons.

McCONNEL COAL CO.
General Office, Du Bois, Pa.
PR—Frank G. St. Clair, Du Bois, Pa.
GM—Frank G. St. Clair, " "
PA—Frank G. St. Clair, " "
TR—Asst. C. C. Hammond, " "
EM—V. R. Pratt.....Reynoldsville, Pa.

Sugar Hill Mine; Slope; Up. Freeport Seam, 4½ to 5 ft. thick.
PO—Falls Creek, Pa., R.D. No. 1; SP—Sugar Hill, Pa.; RR—P. S. & N.
MS—Amos Goss.....Falls Creek, Pa.
S of H—1 Elec. loco. track gauge 42 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers total 90 H. P., 2 gas engines, gen. units 500 volts D. C., 2 pumps
EMP—65. Last fiscal year output 80,000 tons.

Beechton Mine; Slope. Up.Freeport Seam, 4½ to 5 ft. thick.
PO—Westville, Pa.; SP—Beechton,Pa.; CTY—Jefferson; RR—P. S. & N.
MS—John H. Kerry.....Westville, Pa.
S of H—1 Elec. loco. and mules; track gauge 42 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers total 200 H. P., 1 gen. unit 500 volts D. C., 2 pumps.
EMP—65. Last fiscal year output 80,000 tons.

McCURDY, J. H. & SON.
McCurdy Mine, Slope; Brookville Seam; 48 to 58 in. thick.
PO—Jackson Center, Pa.; SP—Same; CTY—Mercer. RR—Penna. Lines, Jackson Center, Br.
PR—J. H. McCurdy..Jackson Center, Pa.
GM—J. H. McCurdy, " " "
PA—J. H. McCurdy, " " "
MS—J. H. McCurdy, " " "
S of H—Mules. Track gauge 32 in.
S of M—Hand.
PP—1 Return tubular boiler total 80 H. P.; 2 pumps.
EMP—25. Last fiscal year output 20,000 tons.

McDONALD COAL CO.
General Office House Bldg., Pgh., Pa.
Willow Grove Mine, Drift, Seam, 5 ft. thick.
PO—Sturgeon, Pa.; SP—Same; CTY—Allegheny. RR—P.C.C.&St.L. Ry.
PR—Robert Young.....McDonald, Pa.
VPR—D. L. Williams, " "
TR—W. S. Lockhart, " "
PA—Messrs. Young & Green, " "
MS—Robt. Young, " "
MM—Robert Fenwick, " "
EE—Robert Fenwick, " "
S of H—Elec. loco.; track gauge 44 in.
S of M—3 Elec. mach. and hand.
PP—Power purchased, 3 pumps.
EMP—110. Coke ovens 11 Bee Hive. Last fiscal year output 70,000 tons.
Sales Agent, J. J. Greene.

McFARLAND, F. P.,
See Eastern Bituminous Coal Mng. Bonds.

McFETRIDGE BROS. COAL CO.
McFetridge Mine, Drift, Lower and Upper Freeport Seam, 24 to 84 in. thick.
PO—Creighton, Pa.; SP—Same; CTY—Allegheny.
RR—P.R.R.—Conemaugh Div.
PR—Wm. McFetridge.....Creighton, Pa.
TR—G. E. McFetridge, " "
GM—G. E. McFetridge, " "
PA—W. F. McFetridge, " "
MS—James Adamson, " "
EE—A. D. Hutchinson, " "
CE—John M. Rayburn..Pittsburgh, Pa.
S of H—Mules, rope and 3 Elec. loco.; track gauge 44 in.
S of M—5 Elec. mach.
PP—2 pumps. Power purchased.
EMP—250. Last fiscal year output, 310,000 tons.

McGLYNN, THOS.
Yorkshire Mine, Slope Miller or "B" Vein, Seam 2 to 6 ft. thick.
PO—Madera, Pa.; SP—Banian Junct., Pa.; CTY—Clearfield.
RR—Penna., Chesterfield Branch.
GS—Thos. McGlynn.....Madera, Pa.
GM—Thos. McGlynn, " "
PA—Thos. McGlynn, " "
MF—Michail Wayne, Osceola Mills, Pa.
EM—Lorain Eng. Co., Philipsburg, Pa.
EE—John Johns.....Madera, Pa.
S of H—Rope and Mules; track gauge 3 ft.
S of M—Hand.
PP—1 Reading boiler, total 80 H. P. 2 pumps.
EMP—97.

McHUGH COAL CO.
Cherry Mine, Drift; Pittsburgh Seam; 5 to 6 ft. thick.
PO—Rennerdale, Pa.; SP—Same; CTY—Allegheny. RR—P.C.C.&St.L.Ry., Pan Handle Br.
PR—Hugh McHugh....Rennerdale, Pa
TR—Hugh McHugh, " "
GM—Hugh McHugh, " "
PA—Hugh McHugh, " "
MS—John McKay .....Oakdale, Pa.
EE—John Riter, " "
S of H—Mules, gravity and 1 elec. loco. Track gauge 40 in.
S of M—Hand and 4 Elec. mach.
PP—1 Return tubular boiler total 150 H. P., 1 engine and gen., 250 volts, D. C.; 2 pumps.
EMP—60. Last fiscal year output 48,334.35 tons.
Sales Agent, Pittsburgh Coal Co., Pgh., Pa.

McINTYRE, JAMES M., & CO.
Shreeve Run Mine; Drift; Kelly and Barnett Seams, 48 in. thick.
PO—Six Mile Run, Pa.; SP—Same; CTY—Bedford; RR—H. & B. T.
GM—Jas. McIntyre, Six Mile Run, Pa.
PA—Jas. McIntyre, " " "
MS—Jas. McIntyre, " " "
SCO—Penn Trading Co., " " "
S of H—Mules, rope and gravity.
S of M—Hand.
PP—1 Return tubular boilers, 24 H.P.
EMP—161. Last fiscal year output 123,077 tons.

McKAIN BROS.
McKain Mine; Drift; 4 ft. thick.
PO—Hilliard, Pa.; SP—Argentine, CTY—Butler.
RR—Bessemer, Argentine Branch.
MS—P.P. McKain.....Hilliard, Pa.
S of H—Mules, track gauge 3 ft.
S of M—Pick.
Last fiscal year output 11108 tons.

McKEEFREY COAL CO.
McKeefrey Mine, Drift, Pgh. Seam, 72 to 96 in. thick.
PO—Martin, Pa.; SP—Same; CTY—Fayette. RR—Monongahela.
PR—John McKeefrey.....Leetonia, O.
TR—N. J. McKeefrey, " "
GM—W. D. McKeefrey, " "
PA—James Henderson.....Martin, Pa.
MS—James Henderson, " "
SM—H. H. King. " "
S of H—2 Elec. loco., track gauge 42 in.
S of M—Hand.
PP—4 Erie Return tubular boilers, total 600 H. P., 2 gen. units, 250 volts D. C.
EMP—100. Coke ovens, 202 Bee Hive. Last fiscal year output 61,000 tons.

McKNIGHT COAL COMPANY.
McKnight Mine, Drift, L Upper Freeport Seam 3 to 4 1-2 ft. thick.
PO—Bruckville, Pa.; SP—Same; CTY—Jefferson. RR—P. S. & N.
PR—E. B. Henderson.
TR—B. E. Taylor, Brockwayville, Pa.
SM—B. E. Tayror, " "
GM—V. F. Taylor, " "
MS—V. F. Taylor, " "
PA—V. F. Taylor, " "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—4 Elec. machines.
PP—2 Return tubular boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 4 pumps.
EMP—150. Last fiscal year output 108,000 tons.

McLEAVY, JOHN & CO.
General Office, Punxsutawney, Pa.
GM—John McLeavy..Punxsutawney, Pa.
GS—John McLeavy, " "
PA—James McLeavy, " "
MM—Lynus Gruber, " "
Sales Agency, Berwind-White Coal Mng. Co.

Shaller Mine, Slope and drift, L Freeport Seam 60 to 78 in. thick.
PO—Punxsutawney, Pa.; SP—Anita, Pa.; CTY—Jefferson.
RR—P.R.R.
MS—John Neverla, Punxsutawney, Pa., R.D. No. 1.
S of H—2 Steam loco. and mules, track gauge 42 in.
S of M—7 Comp. air mach. and hand.
PP—2 Return tubular, Phoenix boilers, 2 air compressors.
EMP—81. Last fiscal year output, 83,582 tons.

Conrad Mine, L. Freeport Seam, 30-72 in. thick.
PO—Punxsutawney, Pa.; SP—Anita, Pa. CTY—Jefferson.
RR—P.R.R.
S of H—Mules.
EMP—44. Last fiscal year output, 32,785 tons.
S of M—Hand.

S. J. MACY & CO.
Out of business.

MADEIRA-HILL COAL MINING CO.
General Office, Philadelphia, Pa.
PR—P. C. Madeira.....Phila., Pa.
TR—L. C. Madeira, " "
GM—Frank A. Hill.....Pottsville, Pa.
GS—W. R. Wilburn....Philipsburg, Pa.
PA—W. R. Wilburn, " "
CE—L. F. Heller, " "
EM—Thos. F. Morgan, " "
MM—Wm. Benner, " "
EE—W. H. Webb.....Munson, Pa.
SCO—Natalie Store Co., Buyer H. E. Apple, Mahaffey, Pa.
Sales Office, Philadelphia, Pa.

Spangler Nos. 2, 3 and 4 Mines; Drifts, "D", "E" and "B" Seams; 26 to 42 in. thick.
PO—Barnesboro, Pa.; SP—Same; CTY—Cambria; RR—P.R.R.
MM—J. W. Cone.....Barnesboro, Pa.
EE—J. W. Hollows, " "
MS—Ed Nicholson, " "
S of H—4 Elec. loco. and mules; track gauge 36 in.
S of M—3 Elec. mach. and hand.
PP—4 Return tubular, Phoenix, boilers, total 530 H. P., 2 gen. units, 250 volts D.. C., 1 comp. and 14 pumps.
EMP—292. Last fiscal year output 229,126 tons.

Clover Run Nos. 1 and 2 Mines, Drifts, "C" Prime and "D"; 30 to 42 in thick.
PO—Mahaffey, Pa. SP—Hillman, Pa. CTY—Clearfield. RR—P.R.R.
MM—J. M. Hicks,.... Mahaffey, Pa
EE—J. F. Fredericks, " "
MS—W. R. Wilburn....Philipsburg, Pa.
S of H—2 Elec loco. Track gauge 36 in.
S of M—Hand; 1 elec. mach.
PP—4 Phoenix return tubular boilers, 600 H. P. 2 gen. units 250 volts D. C. 2 pumps.
EMP—176. Last fiscal year output, 87,768 tons.

Elizabeth Nos. 1 and 2 Mines, Slope; "B" Seam, 34 to 42 in. thick.
PO—Houtzdale, Pa. SP—Same. CTY—Clearfield. RR—P. R. R.
MS—(1) Geo. Charlton, Houtzdale, Pa and (2) W. R. Willburn, Phillipsburg, Pa.
S of H—Mules and rope. Track gauge 36 in.
S of M—2 Comp. air mach. and hand
PP—1 Erie return tubular boiler, 375 H. P., 2 compressors and 3 pumps.
EMP—213. Last fiscal year output, 106,744 tons.

MAGEE COKE CO.
General Office, Uniontown, Pa.
Magee Mine, Shaft, Pittsburgh Seam, 9ft. thick.
PO—Latrobe, Pa., R.F.D No. 3, SP—Mammoth, Pa., CTY—Westmoreland.
RR—P.R.R.
PR—J. W. Abraham..Uniontown, Pa.
TR—I. W. Semans, " "
GM—J. W. Abraham, " "
PA—J. W. Abraham, " "
GS—J. W. Abraham, " "
CE—F. G. Christopher, " "
MS—J. S. Conner, R.F.D., No. 3, Latrobe, Pa.
S of H—Mules; track gauge 42 inches.
S of M—Hand.
PP—Boilers, 250 H. P., 1 Pump.
EMP—46. Last fiscal year output 21,187 tons.
40 Bee Hive coke ovens.
Sales Agents, Producers Coke Co., Uniontown, Pa.

MAHER COAL & COKE CO.
No. 4 Maher Mine, Drift, Upper Freeport Seam, 46 in. thick.
PO—Leechburg, Pa. SP—Same. CTY—Armstrong; RR—P. R. R., Schenley Br.
TR—Thos. Maher, ... Pittsburgh, Pa.
GM—R. Campbell Maher..Leechburg, Pa.
GS—R. Campbell Maher, " "
PA—R. Campbell Maher, " "
EE—E. J. McTigue, " "
EM—E. A. Watters, " "
SCO—Schenley Supply Co., " "
S of H—3 Elec. loco. Track gauge 42 in.
S. of M—6 Elec. mach.
PP—1 Gen. unit, 250 volts D. C.; Purchase power.
EMP—120. Last fiscal year output, 121,000 tons.

MAHER & GRAFF.
Columbia Plate Glass Mine, Drift, Pgh.-Connellsville Seam, 5 to 6 ft. thick
PO—Blairsville, Pa. SP—Same. CTY—Indiana. RR—Penna.
GM—Thos. Maher, ..Pittsburgh, Pa.
GS—Thos. Maher, " "
PA—Thos. Maher, " "
MF—T. R. Wilson, ..Blairsville, Pa.
EM—Albert Smith, ... Saltsburg, "
S of H—Mules and rope. Track gauge 39 in.
S of M—Hand.
PP—Purchase power.
EMP—50. Last fiscal year output 60,000 tons.

MAHONING COAL CO.
General Office, New Bethlehem, Pa.
Ruth Mine, Drift, Up. Freeport Seam. 48 to 60 in. thick.
PO—New Bethlehem, Pa. R.D.No. 6. SP—Putneyville, Pa. CTY—Armstrong. RR—Pittsburgh, Shawmut & Northern, Main Line.
PR—J. C. Maurer.....Ringgold, Pa.
TR—Daniel Maurer.....Worthville, Pa.
GM—J. W. Sullivan..New Bethlehem, Pa.
PA—J.W.Sullivan, " "
MS—J.W.Sullivan, " "
CE—S. J. Mortimer..Lawsonham, Pa.
MF—Joseph Gray, ...Oak Ridge, "
S of H—Mules, rope and gravity; track gauge, 42 in.
S of M—5 Comp. air mach.
PP—1 Water tube boilers, 75 H. P., 1 compressor, 2 pumps.
EMP—37. Last fiscal year output, 11,437 tons.
Sales Agency, Shawmut Coal & Coke Co., Buffalo, N. Y.

MAHONING COKE CO.
Mahoning Mine. CTY—Fayette.
GS—J. M. Gray.....Connellsville, Pa.
No report.

MANOR GAS COAL CO.
General Office, Philadelphia, Pa.
Denmark Mine, Slope, Pgh. Seam, 68 to 76 in. thick.
PO—Claridge, Pa. SP—Same. CTY—Westmoreland; RR—P.R.R. Manor Br.
PR—S. Pemberton Hutchison, Philadelphia, Pa.
TR—C. F. Godshall....Philadelphia, Pa.
GS—H. L. Good, ... Claridge, Pa.
PA—H. L. Good, " "
EM—Mr. Evans. " "
MM—Bert Kipple, " "
EE—T. D. Parfitt, " "
S of H—4 Elec. loco. Track gauge 40 in.
S of M—Hand and 12 Elec. mach.
PP—10 Return tubular boilers, total 1,400 H. P. 3 gen units, A. C., 3 phase, 60 cycles, 550 volts D. C., 7 pumps. Last fiscal year output, 400,000 tons.

MANS WILLIAMS COAL CO.
Bulls Run Mine. CTY—Allegheny.
GS—Robert Heath.....Glassport, Pa.
No report.

MAPLE GLEN COAL WORKS.
General Office, 615 Oliver Bldg., Pgh., Pa.
Maple Glen Mine, Drift, Pgh. Seam 4 to 7½ ft. thick.
PO—Shoring, Pa.; SP—Maple Glen; CTY—Washington, Pa.
GM—Chas. W. Braznell..Pittsburgh, Pa.
MS—S. H. Braznell, Shoring, Pa
PA—S. H. Braznell, " "
MM—John Grantham, " "
EE—James Crouch, " "
EM—Frank Boyd,.....Uniontown, Pa.
SCO—Maple Glen Supply Co., Shoring, Pa.; Buyer S. H. Braznell.
S of H—1 Elec. loco., track gauge 42 in.
S of M—4 Elec. machines.
PP—1 Return tubular boiler, 100 H. P., 1 Gen. unit, 75 volts, D. C., 1 pump.
EMP—100. Last fiscal year output, 89,156 tons.

MAPLE RIDGE COAL CO.
General Office No. 1 Broadway, New York, N. Y.
PR—D. L. Morrison, New York, N.Y.
TR—W. F. Ainsworth, " "
GM—W.A. Marshall, " "
GS—F. A. Shultz.....Hollsopple, Pa.
PA—W. E. Wilson, " "
EM—Fetterman Eng. Co., Johnstown, Pa
SCO—Maple Ridge Supply Co., Buyer, Frank Stuart, Holsopple, Pa.
Sales Agency, W. A. Marshall & Co., New York, N. Y.

Maple Ridge Mine; Drift C Prime Seam; 48 in. thick.
PO—Hollsopple, Pa.; SP—Same; CTY—Somerset.
RR—B.& O., S. & C. Branch.
S of H—Mules and rope; track gauge 36 in.
S of M—1 Elec. mach. and hand.
PP—2 Return tubular boilers, total 275 H. P., 2 pumps.
EMP—75. Last fiscal year output 69,932 tons.

Bethel Mine; Slope; Miller Seam; 36 to 54 in. thick.
PO—Hollsopple, Pa.; SP— Same; CTY Somerset.
RR—B. & O., S. & C. Branch.
S of H—Rope and mules, track gauge 42 in.
S of M—3 Elec. mach.
PP—2 Return tubular boilers, total 250 H. P., 1 pump.
EMP—50. Last fiscal year output 67,174 tons.

MARGARET SMOKELESS COAL CO.
Landstreet Mine; Drift; "B" Seam, 3 ft. 4 in. to 3 ft. 9 in. thick.
PO—Hooversville, Pa.; SP—Landstreet, Pa.; CTY—Somerset; RR—B. & O. Rockwood to Johnstown Branch.
PR—L. S. W. Ray, Blairsville, Pa.
TR—Jacob G. Geib, " "
GM—Frank J. Dixon, Hooversville, Pa.
PA—Frank J. Dixon, " "
CE—Frank J. Dixon, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—1 Erie boiler, 35 H.P.

MARGARET TILE BRICK & COAL CO.
Clark Mine; Drift; Freeport Seam, 48 in. thick.
PO—Freeport, Pa.; SP—Clark's Mine, Pa.; CTY—Armstrong; RR—P. R. R., Butler Br.
PR—John J. Rattigan, Peoples Bank Bldg., Pittsburg, Pa.
PA—John J. Rattigan, Peoples Bank Bldg., Pittsburg, Pa.
TR—W. W. Wilson....Washington, Pa.
GM—H. S. Stirling.....Freeport, Pa.
GS—H. S. Stirling, " "
CE—A. F. Schmidt, " "
MS—D. C. Lowens, " "
S of H—Mules; track gauge, 42 in.
S of M—Hand.
Successors to the Buffalo Creek Coal & Brick Co.
NOTE—Will starrt operations within the next 30 days, June 25, 1915.

MARIETTA-CONNELLSVILLE COKE CO.
General Office, Connellsville, Pa.
Marietta Mine; Drift; Pgh. Seam; 90 in. thick.
PO—Ligonier, Pa.; SP—Same; CTY—Westmoreland; RR—Ligonier Valley.
PR—R. Marietta .....Ligonier, Pa.
TR—R. Marietta. " "
GS—S. R. Kelly, ... Ligonier, Pa.
S of H—Mules.
S of M—Hand.
PP—1 boiler, 15 H. P.
EMP—45. Coke orens 40.

MARIETTA-GAINER COAL & COKE CO.
Out of business.

MARIETTA R. COAL CO.
Mine exhausted.

MARION COKE CO.
Out of business.

MARYLAND COAL CO. OF PENNA
General Office, Commercial Trust Bldg., Philadelphia, Pa.
Maryland Mine, Shaft, Miller Seam.
PO—St. Michael, Pa. SP—Same. CTY—Cambria; RR—P. R. R.
PA—W. W. Whitney, Philadelphia, Pa.
TR—B. L. Simpson, " "
MS—Jas. Keenan, St. Michael, "
S of H—Elec. loco.
S of M—Elec. mach.
PP—4 water tube boilers, total 1,600 H. P., gen. units, 2,300 volts A. C., 550 volts D. C.
Output, 350 tons daily.

MAZENKO, GEORGE
Flinton No. 1 Mine. CTY—Cambria.
GS—George Mazenko.....Flinton, Pa.
No report.

MARYLAND COAL & COKE CO.
General Office, Philadelphia, Pa.
Imperial No. 2 Mine; Drift; "B" seam, 48 in. thick.
PO—Osceola Mills, Pa.; SP—Houtzdale, Pa.; CTY—Clearfield; RR—P. R. R., Amesville Branch.
PR—George P. Spates, Philadelphia, Pa.
TR—Frank A. Taylor, " "
GM—Medford J. Brown, " "
PA—J. Frank Brown, Osceola Mills, Pa.
MS—J. Frank Brown, " " "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—Power purchased.
Output 250 tons daily.

MEADOW LANDS COAL CO.
General Office, Second National Bank Bldg., Pittsburg, Pa.
PR—B. S. Hammill....Pittsburg, Pa.
GM—B. S. Hammill. " "
TR—J. S. Boggs, " "
PA—J. S. Boggs, " "
GS—H. J. Nelms, " "
EM—H. J. Nelms, " "
MM—H. J. Nelms, " "
EE—H. J. Nelms, " "
Sales Agent, S. J. Donohoe, Pittsburg, Pa.

No. 1 Mine; Drift; Pgh. Seam, 66 in. thick.
PO—Meadow Lands, Pa.; SP—Same; CTY—Washington; RR—P. C. C. & St. L.
MS—Ed Carlin....Meadow Lands, Pa.
S of H—1 Elec. loco. and mules.
S of M—8 Elec. mach.
PP—2 Boilers, total 300 H. P., gen. units, 500 volts D. C., 4 pumps., also purchase power.

No. 2 Mine; Shaft; Pgh. Seam, 66 in. thick.
PO—Arden, Pa.; SP—Same; CTY—Washington; RR—P. C. C. & St. L.
MS—J. P. Kelly.....Arden, Pa.
S of H—8 Elec. loco. and mules.
S of M—11 Elec. mach.
PP—6 Boilers, 900 H. P., gen. units, 500 volts D. C., 3 pumps, also purchase power.

No. 3 Mine; Slope; Pgh., Seam, 66in. thick.
PO—Avella, Pa.; SP—Same; CTY—Washington; RR—W. T.
MS—James Collins.....Avella, Pa.
S of H—3 Elec. loco. and mules.
S of M—8 Elec. Mach.
PP—1 Boiler, 150 H. P., gen units, 500 volts D. C., 3 pumps; also, purchase power.
EMP—Total, 1,000.

MERCER IRON & COAL CO.
General Office, Stoneboro, Pa.
PR—E. P. Watson.....Silverton, Colo.
TR—John G. Cann.....Stoneboro, Pa.
GM—Robert P. Cann, " "
PA—Robert P. Cann, " "
GS—L. J. Cann, " "
EM—L. J. Cann, " "
CE—Cleveland Const. Co., Cleveland, O.

Stoneboro No. 7 Mine; Shaft; Brookville Seam; 48 to 72 in. thick.
PO—Stoneboro, Pa.; SP—Same; CTY—Mercer; RR—N. Y. C., Franklin Br.
S of H—7 Elec. loco.; track guage 36 in.
S of M—8 Elec., 15 Comp. Air mach., and hand.
PP—2 Water tube, 5 return tubular boilers, total 1000 H. P., 8 gen units, 2200 A. C., 500 volts D. C., 1 compressor, 4 pumps.
EMP—100. Last fiscal year output 210,000 tons.

Sutton No. 10 Mine; Drift; L. Kittanning Seam, 36 to 72 in. thick.
PO—Kingsville, Pa.; SP—Sutton, Pa.; CTY—Clarion; RR—N. Y. C., J. F. & C. Br.
MS—George Young.....Kingsville, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—40. Last fiscal year output 24,-tons.

MERCHANTS COAL CO.
General Office, Union Bank Bldg., Pittsburgh, Pa.
Mines in Pa. and in W. Va.
Thurston Wright, A. M. Bell, Receivers, Pittsburgh, Pa.
GS—John Gibson, Jr.....Boswell, Pa.
PA—E. P. Payne.....Pittsburgh, Pa.
CE—John M. Rayburn, " "
EM—C. E. Hurd.....Boswell, Pa.
EE—Thos. Houlton, " "
SCO—Penn Mercantile Co., Boswell, Pa.

Orenda Mine No. 2; slope, "C" Prime Seam, 6 ft. thick.
PO—Boswell, Pa. SP—Same. CTY—Somerset; RR—B. & O., Boswell Br.
MS—George Crossland.
SM—E. C. Hazlett.
S of H—12 Elec. loco., mules and rope; track gauge 42 in.
S of M—Hand.
PP—8 Water tube boilers, total 2400 H. P., 3 gen. units 250 volts D. C., 3 pumps.
EMP—600. Last fiscal year output 466,686 tons.

Elk Lick Mine, drift, Pgh. Seam, 6 ft. thick.
PO—Elk Lick, Pa. SP—Salisbury, Pa CTY—Somerset. RR—B. & O.
MS—J. C. Treverrow.
S of H—2 Elec. loco; track gauge, 42 in.
S of M—Elec.
PP—2 Return tubular boilers, 1 gen. unit 250 volt D. Annual output, 69,123 tons.

MERRILL, W. A. & SON.
Quality No. 1 Mine; Drift; Pittsburgh Seam 44 to 54 in. thick.
PO—Garrett, Pa.; SP—Pine Hill, Pa.; CTY—Somerset; RR—B. & O., Berlin Branch.
PR—W. A. Merrill, Garrett, Pa.
MS—C. A. Merrill, " "
SCO—Enterprise Supply Co., " "
S of H—Gasoline motor and mules; track gauge 42 in.
S of M—1 Comp. air mach. and hand.
EMP—50. Last fiscal year output 35,000 tons.
Formerly the Quality No. 1 Mine of Taylor & McDowell.

MEYERSDALE COAL CO.
See Stauffer—Quemahoning Coal Co.

MEYERSDALE FUEL CO.
Fuel Nos. 1, 2 and 3 Mines; Drifts, Pgh. Seam; 60 to 84 in. thick.
PO—Meyersdale, Pa.; SP—West Salisburg, Pa.; CTY—Somerset; RR—B. & O., Salisbury Br.
PR—R. E. Beerits.....Somerset, Pa.
TR—W. H. Stotler.....Meyersdale, Pa.
GM—W. H. Stotler, " "
PA—W. H. Stotler, " "
MS—H. C. Siehl, " "
CE—J. J. Hoblitzell, Jr. " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—None.
EMP—130. Last fiscal year output, 80,190 tons.

MIDLOTHIAN COAL CO.
General Office, Land Title Bldg., Philadelphia, Pa.
Midlothian Mine; Slope; Fulton Seam, 42 to 66 in. thick.
PO—Dudley, Pa.; SP—Same; CTY—Huntingdon; RR—H. & B. T.
PR—Arnold Gerstell, Philadelphia, Pa.
TR—Lucas Sorzano, " "
GM—W. H. Reed, ...Dudley, Pa.
PA—W. H. Reed, " "
MS—W. H. Reed, " "
S of H—Rope.
S of M—Hand.
PP—1 Erie boiler, 1 pump.
Sales Agency, Percy Heilner & Son, Philadelphia, Pa.

MILFORD COAL CO.
General Office, Johnstown, Pa.
Milford Mines, Shaft and drift; A. and B Seams, 3 to 6 ft. thick.
PO—R. F. D. No. 1, Somerset, Pa.; SP—Murdock, Pa.; CTY—Somerset; RR—B. & O.
PR—J. M. Murdock, .. Johnstown, Pa.
TR—W. F. Murdock, " "
GM—H. B. Murdock, " "
PA—H. B. Murdock, " "
MS—I. W. Walter.....Somerset, Pa.
S of H—Mules. Track gauge 36 in.
S of M—Hand.

MILLER, CLARK S.
Miller Mine; Seam, 48 in. thick.
PO—Indian Head, Pa.; SP—Miller's Crossing, Pa.; CTY—Fayette; RR—B. & O.
GM—Clark S. Miller, Indian Head, Pa.
S of H—Mules.

MILLER COAL CO.
General Office, Philadelphia, Pa.
Miller No. 1 Mine, Shaft.
PO—Portage, Pa. SP—Same. CTY—Cambria. RR—P. R. R.
PR—C. H. Brown....Philadelphia, Pa.
TR—H. R. Burt, " "
GM—H. R. Burt, " "
MS—J. W. Buckwalter, Portage, "
S of H—Rope.
S of M—Hand.
PP—4 boilers, total H. P. 800.
EMP—450.

MILLER RUN COAL CO.
Miller Run No. 1 Mine.
PO—Hastings, Pa. CTY—Cambria.
EMP—36. Last fiscal year output 27,029 tons. State report.

MILSOM COAL COMPANY.
Lantzy Mine, Drift; "D" Seam, 3 ft. 8 in thick.
PO—Carrolltown, Pa. SP—Carrolltown Roads, Pa. CTY—Cambria. RR—N. Y. C. & H.
PR—C. H. Milsom ..Carrolltown, Pa.
GM—C. H. Milsom, " "
PA—C. H. Milsom....Carrolltown, Pa.
MS—C. H. Milson, " "
TR—A. L. Milsom, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
EMP—17. Last fiscal year output 7,500 tons.

MINNS, GEO. JR.,
Clear Run Mine, Drift; "Upper Freeport" Seam, 4 ft. thick. ¼
PO—Du Bois, Pa. CTY—Clearfield.
GM—George Minns, Jr. Du Bois, Pa.
MS—George Minns, Jr. " " "
S of H—Mules; track gauge 36 in.
S of M—1 Electric machine.
PP—Purchase power.
EMP—11. Last fiscal year output, 15,000 tons.

MITCHELL-WATSON COAL & COKE CO.
General Office, Saltsburg, Pa.
Mitchell Watson Nos. 1 and 2, Drifts, Upper Freeport or Bed "E" Seam, 48 to 36 in. thick.
PO—Mooween, Pa.; SP—White, Pa.; CITY—Indiana; RR—Penna. R. R.;—Conemaugh Div.
PR—G. P. McCartney, Saltsburg, Pa.
TR—James P. Watson, " "
GM—James P. Watson, " "
PA—James P. Watson, " "
GS—Charles S. Ray, " "
CE—Albert Smith, " "
MM—Jacob Emanuel.....Mooween, Pa.
MS—A. T. Kime, " "
SCO—Watson Supply Co., Buyer, James P. Watson.
SM—Ed. Green, Mooween, Pa.
S of H—3 Elec. loco., track gauge 39 in.
S of M—7 elec. mach., 6 comp. air machines.
PP—3 Erie City Water tube boilers, total 450 H. P., 2 Gen. units 250 volts; 1 air compressor, 2 pumps.
EMP—125, last fiscal year output 131,-169.38 tons.

MIZENER, F. A.
Grant Mine, Drift, Kittanning Seam.
PO—Claytonia, Pa. SP—Same. CTY—Butler. RR—B. & A. V.
GM—M. P. Mizener, .. Claytonia, Pa.
PA—M. P. Mizener, " "
MS—Alex. Skinner, " "
S of M—Comp. air.
PP—1 return tubular boiler, total 150 H. P., 1 air compressor.
EMP—97. State report.

MOHAWK MINING CO.
Mohawk Mine; Drift; L. Freeport Seam, 36 to 76 in. thick.
PO—Kittanning, Pa.; SP—Same; CTY—Armstrong; RR—P. S. & N.
PR—N. L. Strong, ...Kittanning, Pa.
TR—C. H. Ferne, " "
EM—Fred Norman, " "
S of H—3 Elec. loco.; track gauge 42 in.
S of M—4 Elec. mach.
PP—Power purchased; 1 motor generator set, 250 volts D. C., 3 phase, 60 cycles, 3 elec. pumps.
EMP—125. Output 700 tons daily.
Sales Agency, Shawmut Coal & Coke Co., Buffalo, N. Y.

MONARCH COAL CO
Monarch Mine; Drift; L. Kittanning Seam, 42 to 48 in. thick.
PO—East Brady, Pa.; SP—Red Bank, Pa.; CTY—Clarion; RR—P. R. R., Allegheny Valley Branch.
TR—C. P. McCafferty, East Brady, Pa.
GM—C. P. McCafferty, " " "
GS—C. P. McCafferty, " " "
PA—C. P. McCafferty, " " "
MS—John Rider, " " "
EM—S. T. Mortimer, " " "
MM—Roy Fennell, " " "
EE—Joseph Painter, " " "
S of H—1 Elec. loco.; track gauge 31 in.
S of M—3 Elec. mach.
PP—3 Return tubular boilers, 3 pumps.
EMP—100.

MONARCH COAL CO.
See Osceola Coal Co.

MONONGAHELA RIVER CON. COAL & COKE CO.
General Office, No. 8 Market St., Pittsburgh, Pa.
PR—W. K. Field, .. Pittsburgh, Pa.
TR—E. C. Kim, " "
GM—Geo. W. Schluederberg, " "
GS—H. R. Miller, " "
PA—F. E. Now,
EM—E. J. Taylor....Pittsburgh, Pa.
EE—A. B. Kiser, " "
SCO—Federal Supply Co., Pittsburgh, Pa

Albany Mine, Drift, Pgh. Seam.
PO—S. Brownsville, Pa. SP—Brownsville Junction, Pa. CTY—Fayette. RR—P. & L. E.
MS—J. S. Wilson....S. Brownsville, Pa.
S of H—1 elec. loco.
S of M—3 Elec. machines.
PP—3 boilers, total 300 H. P., gen. units, 250 volts, D. C.
EMP—240. Last fiscal year output 74,704 tons.

Alice Mine, Drift, Pgh. Seam.
PO—Roscoe, Pa. SP—East Roscoe, Pa. CTY—Washington. RR—P. & L. E.
MS—John Kerr.....Roscoe, Pa.
S of H—3 elec. loco.
S of M—12 elec. mach.
PP—4 boilers, total 1,050 H. P.
EMP—411. Last fiscal year output, 192,229 tons.

Apollo Mine, Drift, Pgh. Seam.
PO—Fayette City, Pa. SP—Same. CTY—Fayette. RR—P. & L. E.
MS—R. H. Nicholas..Fayette City, Pa.
S of H—2 elec. locos.
S of M—9 elec. mach.
PP—Power purchased, 3 pumps.
EMP—403. Last fiscal year output, 171,545 tons.

Black Diamond Mine, Drift, Pgh. Seam.
PO—Monongahela, Pa. SP—Black Diamond, Pa. CTY—Washington. RR—P. V. & C.
MS—A. P. Cochran..Monongahela, Pa.
S of H—Elec. loco.
S of M—Elec. mach.
PP—6 boilers, total 900 H. P., gen. units 500 volts D. C.
EMP—365. Last fiscal year output, 100,076 tons.

Bunola Mine, Drift, Pgh. Seam.
PO—Monongahela, Pa. SP—Bunola, Pa. CTY—Washington. RR—P. & L. E.
MS—Lance Linsley....Monongahela, Pa.
S of H—4 elec. locos.
S of M—14 elec. mach.
PP—Power purchased, 4 pumps.
EMP—415. Last fiscal year output, 163,656 tons.

Catsburg Mine, Drift, Pgh. Seam.
PO—Monongahela, Pa. SP—Same. CTY—Washington. RR—P. V. & C.
MS—A. P. Cochran..Monongahela, Pa.
S of H—Elec. loco.
S of M—Elec. mach.
PP—Power purchased.
EMP—348. Last fiscal year output, 139,398 tons.

Chamouni Mine, Pgh. Seam.
PO—So. Brownsville, Pa. SP—East California, Pa. CTY—Fayette. RR—P. & L. E.
MS—J. A. Wilson....S. Brownsville, Pa.
S of H—1 elec. loco.
S of M—2 elec. mach.
PP—2 return tubular boilers, total 200 H. P., gen. units 500 volts D. C. and 2 pumps.
EMP—256. Last fiscal year output, 172,746 tons.

Cincinnati Mine, Pgh. Seam.
PO—Finleyville, Pa. SP—Courtney, Pa. CTY—Washington. RR—P. V. & C.
MS—Wm. Carter .....Finleyville, Pa.
S of H—Elec. locos.
S of M—Elec. mach.
PP—Power purchased.
EMP—261. Last fiscal year output, 71,841 tons.

Coal Bluff Mine, Drift, Pgh. Seam.
PO—Finleyville, Pa. SP—Coal Bluff, Pa. STY—Washington. RR—P. V. & C.
MS—Wm. Carter.....Finleyville, Pa.
S of H—1 elec. loco.
S of M—9 elec. mach.
PP—Power purchased.

Continued on Next Page.

EMP—245. Last fiscal year output, 171,640 tons.

Crescent Mine, Drift, Pgh. Seam.
PO—California, Pa. SP—Same. CTY—Washington. RR—P. V. & C.
MS—Geo. Harkess.....California, Pa.
S of H—22 elec. locos.
S of M—24 elec. mach.
PP—4 boilers, total 1,580 H. P. gen. units 500 volts D. C. and 8 pumps
EMP—1202. Last fiscal year output, 1,138,501 tons.

Eclipse Mine, Drift, Pgh. Seam.
PO—Roscoe, Pa. SP—Wood Run, Pa. CTY—Washington. RR—P. V. & C.
MS—John Kerr.....Roscoe, Pa.
S of H—2 elec. loco.
S of M—12 elec. mach.
PP—Power purchased.
EMP—535. Last fiscal year output, 160,881 tons.

Fayette City Mine, Drift, Pgh. Seam.
PO—Fayette City, Pa. SP—Same. CTY—Fayette. RR—P. & L. E.
MS—R. H. Nicholas .Fayette City, Pa.
S of H—3 elec. locos.
S of M—11 elec. mach.
PP—Power purchased.
EMP—408. Last fiscal year output, 236,120 tons.

Gallatin Mine, Drift, Pgh. Seam.
PO—Gallatin, Pa. SP—Same. CTY—Allegheny. RR—P. & L. E.
MS—F. J. Counihan ....Gallatin, Pa.
S of H—3 elec. locos.
S of M—15 elec. mach.
PP—Central plant and 2 pumps.
EMP—379. Last fiscal year output, 261,577 tons.

Knob Mine, Drift, Pgh. Seam.
PO—So. Brownsville, Pa. SP—West Brownsville, Pa. CTY—Washington. RR—P. V. & C.
MS—J. A. Wilson,..S. Brownsville, Pa.
S of H—1 elec. loco.
S of M—2 elec. mach.
PP—5 boilers, total 200 H. P., gen. units 500 volts D. C. and 2 pumps.
EMP—203. Last fiscal year output, 141,424 tons.

Lovedale Mine, Drift, Pgh. Seam.
PO—Elizabeth, Pa. SP—Wylie, Pa. CTY—Allegheny. RR—P. & L. E.
MS—A. P. Cochran.....Elizabeth, Pa.
S of H—Elec. locos.
S of M—11 elec. mach.
PP—Central plant and 2 pumps.
EMP—289. Last fiscal year output, 143,741 tons.

Mongah Mine, Pgh. Seam.
PO—Monongahela, Pa. SP—Brownsdale, Pa. CTY—Washington. RR—P. & L. E.
MS—Lance Linsley....Monongahea, Pa.
S of H—2 elec. locos.
S of M—1 elec. mach.
PP—Power purchased, 1 pump.
EMP—387. Last fiscal year output, 140,796 tons.

Risher Mine, Pgh. Seam.
PO—Dravosburg, Pa. SP—Same. CTY—Allegheny. RR—Union.
MS—Thomas Watkins..Dravosburg, Pa.
S of H—4 elec. locos.
S of M—12 elec. mach.
PP—5 return tubular boilers, total 625 H. P., gen. units, 250 volts D. C. and 3 pumps.
EMP—192. Last fiscal year output, 184,592 tons.

Sunnyside Mine, Slope, Pgh. Seam.
PO—Gallatin, Pa. SP—Milesville, Pa. CTY—Allegheny. RR—P. & L. E.
MS—F. J. Counihan....Gallatin, Pa.
S of H—3 elec. locos.
S of M—12 elec. mach.
PP—Central plant, gen. units, 500 volts D. C. and 1 pump.
EMP—360. Last fiscal year output, 315,382 tons.

Tremont Mine, Slope, Pgh. Seam.
PO—Arnold City, Pa. SP—Tremont, Pa. CTY—Allegheny. RR—P. & L. E.
MS—H. M. White....Arnold City, Pa.
S of H—2 elec. locos.
S of M—12 elec. mach.
PP—Power purchased, 3 pumps.
EMP—479. Last fiscal year output, 424,782 tons.

Walton Mine, Drift, Pgh. Seam.
PO—West Elizabeth, Pa. SP—Floreffe, Pa. CTY—Allegheny. RR—P. V. & C.
MS—John Young ..West Elizabeth, Pa.
S of H—1 elec. loco.
S of M—8 elec. mach.
PP—Central plant, gen. units, 250 volts D. C. and 2 pumps.
EMP—320. Last fiscal year output, 24,,323 tons.

Yough No. 2 Mine, Drift.
PO—Elizabeth, Pa. SP—Boston, Pa. CTY—Washington. RR P. & L. E.
MS—A. P. Cochran.....Elizabeth, Pa.
S of H—3 elec. locos.
S of M—12 elec. mach.
PP—6 boilers, total 605 H. P., gen. units, 250 volts D. C. and 2 pumps.
EMP—308. Last fiscal year output, 245,808 tons.

MONTEREY COAL CO.
General Office, Leechburg, Pa.
Monterey Mine, Drift.
PO—W. Monterey, Pa. SP—Same. CTY—Clarion. RR—A. V.
GM—L. W. Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
MS—A. J. Watson.....Monterey, Pa.
EM—E. A. Watters, " "
S of H—Mules.
S of M—11 comp. air mach.
PP—3 boilers, total 300 H. P., 2 air comp., 2 pumps.
EMP—122. Last fiscal year output 109,200 tons.

MONTOUR & LAKE ERIE COAL CO.
General Office, First National Bank Bldg., Pittsburgh, Pa.
PO—Imperial, Pa. R. F. D.; SP—Boggs Station, Pa.; CTY—Allegheny; RR—Montour.
GM—J. S. Boggs.....Pittsburgh, Pa.
PA—J. S. Boggs, " "
MS—Richard Wilson, " "
EMP—30 to 40.
New operation.

MORAVIAN COAL CO.
General Office, Snow Shoe, Pa.
Moravian Mine; Drift; "B" Seam, 36 in. thick.
PO—Grassflat, Pa.; SP—Peale, Pa.; CTY—Clearfield; RR—N. Y. C. & H. R., Grassflat Branch.
TR—W. D. O'Brien, Snow Shoe, Pa.
GM—O. J. Harm, " " "
PA—O. J. Harm, " " "
MS—Frank Greaves. ....Grassflat, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Pumps.
EMP—80.
Output for one year 75,000 tons.

MORRELLVILLE COAL MNG. CO.
See Conemaugh Valley Coal Mng. Co.

MORRIS, J. V.
Claytonia Mine. CTY—Butler.
GS—J. V. Morris.....Cleveland, O
MS—Phil E. Morris.....Grove City, Pa.
State report.

MORRISDALE COAL COMPANY.
General Office, Philadelphia, Pa.
Morrisdale Shafts Nos. 1, 2 and 3, Shaft; C. and B. Seam; 3 ft. 8 in. to 5 ft. thick.
PO—Morrisdale, Pa. SP—Same. CTY Clearfield. RR—Shafts 1 and 3, N. Y. C. & H. R. R.; No. 2, P. R. R.
PR—F. H. Wigton, Philadelphia, Pa.
TR—R. W. Wigton, "
GS—C. B. Maxwell....Morrisdale Pa.
PA—C. B. Maxwell, " "
MS—Royal Aldstadt, " "
EM—Le Baron Smith, " "
MM—Louis Honhke, " "
EE—Rayner Morton, " "
SCO—Morrisdale Supply Co. Buyer, C. P. Pennepacker.
S of H—12 Elec. loco.; track gauge 37 in.
S of M—11 Elec. and 50 Comp. air mach.
PP—18 Return tubular boilers, total 2,600 H.P. 220 A. C., 3 phase and 60 cycles, 250 and 500 D. C. 5 air compressors, 30 pumps. Power purchased for No. 3 shaft.
EMP—556. Coke ovens—106 Bee Hive. Last fiscal year output 458,354 tons. Sales agent—C. B. Maxwell, Morrisdale, Pa.

MORRIS RUN COAL MINING CO
Lake, Jones Mine, Slope and Drift, Bloss & Morgan Seam 2 ft. to 3 ft. thick.
PO—Morris Run, Pa.; SP—Same; CITY—Tioga; RR—N. Y. C. and Erie.
PR—John Conyngham, Wilkes-Barre, Pa.
TR—T. S. Barber, " "
GM—T. S. Barber, " "
PA—Harry Ash, " "
GS—Chas. G. Morgan, Morris Run, Pa.
EE—T. S. Sage, " " "
SCO—Ellsworth & Co.; Buyer, Mark Barkwell, Morris Run, Pa.
S of H—Mules and 9 Elec. loco. Track Gauge 2 ft. 5 in.
S of M—Hand.
PP—3 Return Tubular Boilers, total 400 H. P., 4 Gen. Units, 250 Volts D. C.
EMP—700. Last fiscal year output, 190,000 tons. Sales agent, O. M. Rothfus, Corning, N. Y.

MOSHANNON COAL MINING CO
PR—C. H. Rowland, Philipsburg, Pa.
TR—C.A.Rickenbaugh, Osceola Mills, Pa.
GS—C. A. Rickenbaugh, " "
GM—C. H. Rowland, " " "
PA—C. A. Rickenbough, " " "
EM—S. H. Eastmont, " " "
EE—G. W. Munns, Sam'l Swires. Sales Agent, C. W. Leslie.

Moshannon, No. 1, Drift, E Seam, 3 to 3½ ft. thick.
PO—Osceola Mills, Pa.; SP—Same. CTY—Clearfield. RR—P. R. R.
MS—Sam'l. Cartwright, Osceola Mills, Pa.
S of H—Mules, track gauge 3 ft.
S of M—Hand.
EMP—9. Last fiscal year output, 5207 tons.

Moshanon No. 4, Drift, E seam, 3 to 3½ ft thick.
PO—Osceola Mills, Pa.; SP—Same, CTY—Clearfield. RR—P. R. R.
S of H—Mules track gauge 3 ft.
S of M—Hand.
EMP—4. Last fiscal year output, 837 tons.

Moshanon No. 8, Drift, "D" Seam 3 to 4 ft. thick.
PO—Osceola Mills, Pa. SP—Moshannon. CITY—Clearfield. RR—P. R. R.
MS—Henry Crain, Osceola Mills, Pa.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
EMP—8. Last fiscal year output, 2200 tons.

Moshannon No. 9, Drift, "D" Seam, 5 to 4 ft. thick.
PO—Osceola Mills, Pa.; SP— Same, CTY—Clearfield. RR—P. R. R.
MS—Thos. Wilkes, Brisbin, Pa.
5 of H—Mules. Track gauge 3 ft.
S of M—Hand.
EMP—7. Last fiscal year output, 8263 tons.

Moshannon No. 10, Drift, B seam, 5 to 3 1-3 ft. thick.
PO—Osceola Mills, Pa.; SP—Same. CTY—Clearfield. RR—P R. R.
MS—Sam'l. Denshaw, Osceola Mills, Pa.
S of H—3 Elec. loco. Track gauge 3 ft.
S of M—4 Elec. machines.
PP—3 Water tube boilers, total 450 H. P., 2 Gen. units, 500 volts, D. C., 1 pump.
EMP—167. Last fiscal year output, 139,069 tons.

Moshannon No 11, drift, B seam, 5 to 3½ ft. thick.
PO—Osceola Mills, Pa.; SP—Same, and Phillipsburg. CTY—Center Co., Pa. RR—P.R.R.
MS—Robt. Reichard, Philipsburg. Pa.
S of H—3 Elec. loco., track gauge 3 ft.
S of M—4 Elec. machines.
PP—1 Pump. Buy power.
EMP—131. Last fiscal year output. 89,185 tons.

Electric Mine, Drift, B Seam, 5 to 4 ft. thick.
PO—Osceola Mills, Pa., SP—Same, CTY—Clearfield; RR—P. R. R.
MS—Irvin Cowher, Osceola Mills, Pa.
S of H—Mules; track gauge 3 ft.
S of M—Hand
PP—500 volts D. C., 3 boilers, each 150 H. P.
EMP—18. Last fiscal year output, 30,650 tons.

Pauline Mine, Drift, E Seam, 3 to 3½ ft. thick.
MS—Jas. Summerville, Osceola Mills. Pa.
S of H—Mules.
S of M—Hand.
EMP—6. Last fiscal year output 1235 tons.

MOSHANNON COLLIERIES CO.
Drift Mine; "D" Moshannon and "E" Seam, 26 to 36 in. thick.
PO—Olanta, Pa.; SP—Mitchell. Pa.; CTY—Clearfield; RR—N. Y. C., Beech Creek Div.
GM—L. H. Hood, Seneca Falls, N.Y.
GS—L. H. Hood, " " "
PA—L. H. Hood, " " "
MS—R. A. Lambert, ..Clearfield, Pa.
EM—E. W. Hess, " "
S of H—Mules.
S of M—Hand.
Sales Agency, Hood Coal Co., Seneca Falls, N.Y.

MOSIER & JOSE.
Out of business.

MOUNT HOPE COAL & COKE CO.
Mount Hope Mine, Drift, Freeport Seam, 42 in. thick.
PO—Sterling Run, Pa.; SP—Same; CTY—Cameron; RR—P. R. R.
PR—A. Brady.....Emporium, Pa.
TR—George A. Walker, Sterling Run, Pa.
GM—George A. Walker " " "
SCO—Sterling Run Store Co., Sterling Run, Pa.
CE—J. E. Fry..... Du Bois, Pa.
S of H—1 Steam loco.; track gauge 36 in.
S of M—Hand.
PP—1 water tube boiler; total 50 H. P.
EMP—55. Last fiscal year output 33,475 tons.

MOUNT HOPE COKE CO.
Sold to the Snowden Coke Co.

MT. PLEASANT COKE CO.
PR—J. W. Kuhns, Greensburg, Pa.
TR—C. J. Kline, " "
GM—C. J. Kline, " "
GS—C. J. Kline, " "
SCO—Mt. Pleasant Supply Co., Buyer, George E. Nicely, Greensburg, Pa.

Boyer Mine, Slope; Connellsville Seam, 9 ft. thick.
PO—Mt. Pleasant, Pa. SP—Udell, Pa. CTY—Westmoreland. RR—P. R. R.—S. W. P. Branch.
MS—Henry Ahlbouree, Mt. Pleasant, Pa.
SM—S. L. Walker, " "
S of H—Mules and rope; trackage 44 in.
S of M—Hand.
PP—1 Water tube boiler, 150 H. P., 1 pump.
EMP—86. Coke ovens, 120 Bee Hive.

Beatty Mine, Drift and slope; Connellsville Seam, 9 ft. thick.
PO—Greensburg, Pa. SP—Beatty Pa.; CTY—Westmoreland. RR—P. R. R.
MS—James Martha.....Greensburg, Pa.
SM—T. M. Daniels, R. F. D. No. 5, Greensburg, Pa.
S of H—Mules and rope. 1 Steam Loco Track gauge 44 in.
S of M—Hand.
PP—4 Water tube boilers, total 375 H. P.; 3 Pumps.
EMP—182; Coke Ovens, 182 Bee Hive. Last fiscal year output, 88,838 tons. tons

MT. PLEASANT-CONNELLSVILLE COKE CO.
General Office, Greensburg, Pa.
Mt. Pleasant Mine; Shaft, Slope and Drift; Connellsville Seam, 108 in. thick.
PO—Mt. Pleasant, Pa. SP—Hecla, Pa. CTY—Westmoreland. RR—P. R. R., S. W. P. Div.
PR—J. W. Kuhns.....Greensburg, Pa.
TR—C. J. Kline, " "
GM—C. J. Kline, " "
GS—C. J. Kline, " "
PA—C. J. Kline, " "
MS—Wm. A. McMurray, Mt. Pleasant, Pa.
EM—C. L. Palmer..Mt. Pleasant, Pa.
SCO—Mt. Pleasant Supply Co., Buyer, Geo E. Nicely, Greensburg, Pa.
SM—T. O. Anderson, Mt. Pleasant, Pa.
S of H—Mules, rope and steam loco.; track gauge, 44 in.
S of M—Hand.
PP—2 Water tube boilers, total 700 H. P.; 2 Compressors and 3 pumps.
EMP—300. Coke ovens, 100 Bee Hive 210 Rectangular. Last fiscal year output, 355000 tons. Sales Agent Producers Coke Co.

MT. VERDE COAL CO.
Mt. Verde Mine, Drift; "B" Seam; 3 ft. thick.
PO—Rosebud, Pa. SP—Irvona. CTY—Clearfield. RR—P. & N. W.
PR—Wm. Heil, Rosebud, Pa.
GM—Wm. Heil, " "
MS—Wm. Heil, " "
GS—C. H. Heil, " "
SM—K. M. Heil, " "
S of H—Mules.
S of M—Hand.
PP—1 Pump.
EMP—30.

MOUNTAIN COAL CO.
General Office, Greensburg, Pa.
Yellow Run Mine; Shaft; Miller or "B" Seam; 45 in. thick.
PO—Dunlo, Pa.; SP—Same; CTY—Cambria; RR—Penna., South Fork Br.
PR—Julian B. Huff.....Greensburg, Pa.
TR—H. W. Conner, " "
GM—A. N. Pershing, " "
PA—A. N. Pershing, " "
EM—Robert Morris, " "
GS—M. J. Bracken.....Gallitzin, Pa.
MS—J. G. Dunsmore.....Dunlo, Pa.
SCO—Yellow Run Supply Co., Buyer, M. A. Luse, Dunlo, Pa.
S of H—Mules, rope and 1 Elec. loco.
S of M—Hand.

Continued on Next Page.

MOUNTAIN COAL CO—Continued.
PP—3 Water tube boilers, total 750 H. P., 1 air comp. and 2 pumps.
EMP—228. Last fiscal year output 154,142.22 tons.
Sales Agency, Keystone Coal & Coke Co., Greensburg, Pa.

MOUNTAIN SMOKELESS COAL CO.
General Office, Beaver, Pa.
Cassellman Nos. 1 and 2 Mines; Drifts; C Prime Seam; 48 in. thick.
PO—Cassellman, Pa.; SP Same; CTY—Somerset; RR—B. & O.
PR—H. W. Reeves....Beaver Falls, Pa.
TR—David A. Nelson, " "
GM—I. W. Logan.....Rochester, Pa.
PA—I. W. Logan, " "
MM—W. T. Wiltrout....Cassellman, Pa.
MS—W. T. Wiltrout, " "
S of H—1 comp. air loco.; track gauge, 40 in.
S of M—10 Compressed air mach.
PP—2 Return tubular boilers, total 200 H. P., 1 compressor, and 4 pumps.
Note—Not operating at present.
Sales Agent, F. O. Brandt, Pittsburgh, Pa.

MOUNTZ, S. J. & CO.
PR—S. J. Mountz....Smith Mills, Pa.
MS—S. J. Mountz, " "
TR—E. J. Mountz, " "
GM—E. J. Mountz, " "
PA—E. J. Mountz, " "
EM—Wm. Close, " "
EE—James McHugh, " "
SCO—S. J. Mountz & Co., Buyer E. J. Mountz.

Viola No. 1 Mine; Slope; Miller Seam; 54 to 66 in. thick.
PO—Smith Mills, Pa.; SP—Jamesville Siding, Pa.; CTY—Clearfield; RR—P. R. R.
S of H—Mules, rope and 1 Elec. loco.; track gauge, 36 in.
S of M—Hand and 1 Elec. mach; track gauge 36 in.
PP—1 Water tube boiler, 120 H. P. Purchase power.
EMP—175. Last fiscal year outp t. 116,000 tons.

Mine S—106, Drift, Freeport seam, 5 to 5½ ft. thick.
PO—Smith Mills, Pa SP—Annandale, Butler Co., Pa. RR—Bessemer & L. E.
MS—Fred Jeffries, .. Smith Mills, Pa.
S of H—Mules; track gauge 3 ft.
S of M—Pick.
EMP—50. Last fiscal year output 40,000 tons.

MUNN, H. A.
See Reed Colliery Co.

MUNSTER COAL CO.
Drift Mine, Miller Seam, 42 in. thick.
PO—Altoona, Pa.; SP—Portage, Pa.; CTY—Cambria; RR—P. R. R.
TR—H. Hahman.....Altoona, Pa.
PA—H. Hahman, " "

MUTUAL COAL MINING CO
General Office, Grove City, Pa.
Royal Mine, Drift Mine, Brookville Seam 48 in. thick.
Seam 4 in. thick.
PO—Argentine, Pa. SP—Same. CTY—Butler RR—B. & L. E. Hilliard Br.
PR—Harry Hamilton, ..Grove City, Pa.
TR—Harry Hamilon, " " "
GM—Harry Hamilton, " " "
GS—John C. Hamilton, Argentine, Pa.
PA—Harry Hamilton, Grove City, Pa.
S of H—Mules, Track gauge 3 ft. 1 in.
S of M—10 comp. air mining machines,
PP—Boiler, total 300 H. P. Erie; 1 compressor; 4 pumps. Last fiscal year output, 43,172 tons.

MYERS, HENRY.
Monroe Mine; Drift; "C" Seam, 31 to 32 in. thick.
PO—Osceola Mills, Pa. SP—Same. CTY—Clearfield. RR—P & S.
PR—Henry Myers....Osceola Mills, Pa
GM—Henry Myers. " " "
MS—Henry Myers " " "
EM—H. S. Shillingford, Osceola Mills, Pa.
S of H—Mules; track gauge 30 in.
S of M—Hand.
EMP—15. Last fiscal year output 7,-100 tons. Sales Agency, J. E. Horn & Co., Phillipsburg, Pa.

NANT-Y-GLO COAL MNG. CO.
General Office, Land Title Bldg., Philadelphia, Pa.
No. 1 Mine, Drift, B Seam, 44 to 48 in. thick.
PO—Nant-Y-Glo, Pa. SP—CTY—Cambria. RR—P. R. R.
GS—C. E. Sharpless....Ebensburg, Pa.
S of H—4 elec. locos.
S of M—26 comp. air mach.
PP—4 return tubular boilers, total 800 H. P. and 1 comp.
EMP—284. Last fiscal year output 223,950 tons.

No. 2 Mine, Drift.
CTY—Cambria. RR—P. R. R.
GS—C. E. Sharpless....Ebensburg, Pa.
MS—John A. Klein.....Elmora, Pa.
S of H—Mules.
EMP—130. Last fiscal year output 96,068 tons.

NAOMI COAL CO.
General Office, Pittsburgh, Pa.
Naomi Mine, Slope, Pgh. Seam; 7 ft. thick.
PO—Belle Vernon, Pa.; SP—Same; CTY—Fayette; RR—P. & L. E.
Samuel A. Gilmore, and Wm. K. Johnson, Receivers.
PA—J. I. Boyd.....Pittsburgh, Pa.
GS—E. L. Morris, " "
MS—F. R. Knight, Belle Vernon, Pa.
EM—H. M. Schmidt....Pittsburgh, Pa.
MM—Thos. Halton, " "
EE—Thos. Halton, " "
SCO—Penn Mercantile Co., buyer, H. D. Bittner, Pittsburgh, Pa.
SM—W. D. Thompson, Bellevernon, Pa.
S of H—8 Elec. loco.; track gauge 44 in.
S of M—12 Elec. mach.
PP—Power purchased.
EMP—450. Last fical year output, 210,000 tons.

NATIONAL MINING CO.
General Office, Carnegie Bldg., Pittsburgh, Pa.
PA—T. S. Duncan, Pittsburgh, Pa.
SCO—Union Supply Co., Frick Bld'g., Pittsburgh, Pa.

National No. 1 Mine Slope, Pgh. Seam 62 in. thick.
PO—Morgan, Pa. SP—Sygan, Pa. CTY—Allegheny. RR—P. C. C. & St. L., B. & M. Branch.
MS—F. A. McDonald, Morgan, Pa.
SM—C. Z. Wilson.....Morgan, Pa.
S of H—Elec. track gauge 42 in.
S of M—Elec.

National No. 2 Mine, Slope, Pgh. Seam 62 in. thick.
PO—Cuddy, Pa. SP—Treveskyn, Pa; Co—Allegheny. RR—P. C. C. & St. L., B & M Branch.
MS—F. A. McDonald, Morgan, Pa.
SM—M. C. Stover, Cuddy, Pa.
S of H—Elec. track gauge 42 in.
S of M—Elec.

NELLIE COAL COMPANY.
General Office, Buffalo, N. Y.
Nellie Mine, Slope; Brookville Seam, 3½ to 3 ft. 8 in. thick.
PO—Argentine, Pa. SP—Same. CTY—Butler. RR—B. & L. E.
PR—H. K. Wick, Youngstown, O.
TR—W. D. Ward, Buffalo, N. Y.
GM—C. B. McFarlin, Argentine, Pa.
PA—C. B. McFarlin, " "
S of H—Mules.
S of M—Hand and 3 Compressed Air Machines.
PP—2 Return Tubular Boilers, total 300 H. P. 1 air compressor, 1 pump.
EMP—83.

NEVLING COAL MINING CO., Inc. (The).
General Office, Clearfield, Pa.
Little Beaver No. 1 Mine; Drift B Seam 51 in. thick.
PO—Houtzdale, Pa., SP—Brisbin, Pa., CTY—Clearfield. RR—Pitts. & Susq. Connecting with New York Central.
PR—J. B. Nevling, Clearfield, Pa.
GS—R. F. Nevling, " "
TR—R. F. Nevling, " "
PA—J. B. Nevling, " "
MM—H. B. Nevling, Houtzdale, Pa.
EM—Womelsdorff & Dunkle, Philipsburg, Pa.
S of H—Mules; track gauge 36 in
S of M—Hand.
PP—1 pump. Purchase power.
EMP—20 to 50.

NEWCOMER COAL CO.
General Office, Scottdale, Pa.
Newcomer Mine; Drift; Pittsburgh Seam, 72 to 78 in. thick.
PO—Teter, W. Va.; SP Same; CTY—Upshur; RR—B. & O., Buckhannon Branch.
PR—W. P. Hurst.....Scottdale, Pa.
TR—R. H. Parker, " "
GM—R. H. Parker, " "
SM—O. F. Hodges.....Teter, W.Va.
Note—Mine closed at present.

NEW ALEXANDRIA COKE CO.
General Office, Greensburg, Pa.
New Alexandria Mines Nos. 1, 2, 3 and 4, Drifts, Pittsburgh Seam, Greensburg Basin, 7 to 8½ ft. thick.
PO—New Alexandria, Pa. SP—Andrico, Pa. CTY—Westmoreland. RR—P. R. R.
PR—R. H. Jamison, Greensburg, Pa.
GM—R. H. Jamison, " "
PA—Paul Johnson, " "
EM—C. L. Clark, New Alexandria, Pa
MS—C. L. Clark, New Alexandria, Pa
S of H—Mules, gravity and 3 Elec. loco. Track gauge 42 in.
S of M—Hand and 1 puncher and 1 chain mach.
PP—2 Return boilers, total 250 H.P., 2 Gen. units 250 volts D. C.
EMP—350. Last fiscal year output Nos. 1, 2, 3 and 4 Mines combined, 429,946 tons.
Sales Agent, Paul Johnson, Greensburg, Pa.

NEWCOMER COKE CO.
General Office, Uniontown, Po.
PR—Elias Wineland, Philadelphia, Pa.
TR—R. W. Gilmore, Uniontown, Pa.
GM—R. W. Gilmore, " "
PA—R. W. Gilmore, " "
GS—R. W. Gilmore, " "
EM—Fayette Eng. Co. " "
CE—Fayette Eng. Co. " "

Newcomer Mine, Drift, Pittsburgh Seam, 9 ft. thick.
PO—Newcomer, Pa. SP—Same. CTY—Fayette. RR—P. R. R.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—30. Last fiscal year output 21,-000 tons. 30 Bee Hive coke ovens.

Pritts Mine, Drift, Pittsburgh Seam, 9 ft thick.
PO—Connnellsville R. F. D. SP—Scottdale, Pa. CTY—Fayette. RR—B. & O.
S of H—Mules; track gauge 42 in.
S of M—Hand
EMP—45. Last fiscal year output 36,-000 tons. 50 Bee Hive coke ovens.

NEW YORK AND CLEVELAND GAS COAL CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
PR—W. K. Field ....Pittsburgh, Pa.
TR—Wm. Miller, " "
GM—G. W. Schluederberg, " "
PA—F. E. Now, " "
EM—E. J. Taylor, " "
EE—A. B. Kiser, " "
GS—Hugh Dunning...Turtle Creek, Pa.

Delmont Mine.
PO—Export, Pa., R. D. SP—Same. CTY—Westmoreland. RR—P.R.R.
S of H—3 elec. locos.
S of M—Hand.
PP—2 return tubular boilers, total 700 H. P., 2 pumps.
EMP—966. Last fiscal year output, 815,028 tons.

Lyons Run Mine.
PO—Irwin, Pa., R. D. No. 2. SP—Saunders, Pa. CTY—Westmoreland. RR—P. R. R.
S of H—Rope.
S of M—Hand.
PP—4 boilers, total 450 H. P., 3 pumps.
EMP—252. Last fiscal year output, 205,900 tons.

Plum Creek Mine, Drift, Pgh. Seam.
PO—Unity, Pa. SP—Verona, Pa. CTY—Allegheny. RR—P. R. R.
S of H—2 steam locos. and mules.
S of M—Hand.
EMP—232. Last fiscal year output, 185,696 tons.

NINEVEH COAL & COKE CO.
General Office, Penn Square Bldg., Philadelphia, Pa.
Valley Smokeless No. 2 Mine; Shaft; "B" Seam, 42 to 46 in. thick.
PO—Seward, Pa.; SP—Same; RR—P. R. R., Main Line; CTY—Westmoreland.
PR—John C. Dawson, 330 Chestnut St., Philadelphia, Pa.
TR—T. Frank Bartholomew, Penn Square Bldg., Philadelphia, Pa.
GS—C. C. Dovey, ...Johnstown, Pa.
PA—C. C. Dovey, " "
MS—Wm. A. Strong, Seward, Pa. ..
SCO—Nineveh Supply Co., Seward, Pa.
S of H—Mules.
S of M—Hand.
PP—2 Boilers, total 400 H.P., 3 pumps; power purchased.
EMP—180. Last fiscal year output 82,835.45 tons.
Sales Agent, Arthur Kuppinger, Philadelphia, Pa.
Formerly owned by J. Blair Kennerly.

NORTH PENN COAL CO.
General Office, Pittsburgh, Pa.
Kaylor and Pine Run Mines. Slope and drift; L. Kittanning Seam 38 to 46 in. thick.
PO—Kaylor, Pa.; SP—Same; CTY—Armstrong.
RR—Western Allegheny.
PR—Wm. Price.....Pittsburgh, Pa.
TR—A. C. Robinson, " "
PA—I. E. Lawrence, " "
GS—C. C. Bakewell.....Kayler, Pa.
SCO—Allegheny Supply Co., Buyer P. May, Kaylor, Pa.
S of H—4 Elec. loco. and hand; track gauge 42 in.
S of M—21 Elec. mach.
PP—5 Return tubular boilers, total 900 H. P., 4 gen. units, 250 volts D. C., 5 pumps.
EMP—416. Last fiscal year output, 218,376 tons.
Sales Agents, B. Nicholl & Co., New York, N. Y.

NORTH PITTSBURGH REALTY CO.
Harmony Junction Mine, Shaft.
PO—Eidenau, Pa. SP—Harmony Jct., Pa. CTY—Butler.
PR—R. H. Boggs.....Pittsburgh, Pa.
TR—P. E. Seddon, " "
GM—E. J. O'Brien, " "
PA—E. J. O'Brien, " "
MS—Chas. Rigby .....Eidenau, Pa.
S of H—Mules.
S of M—Hand.
PP—2 pumps, purchase power.
Last fiscal year output 21,600 tons.
Sales agent, E. J. O'Brien, Pittsburgh, Pa.

NORTHERN CONNELLSVILLE COKE CO.
Marthabel Mine, 4 openings, Drift and slopes. Pgh. Seam 7 to 10 ft. thick.
PO—Connellsville, Pa. SP—Huff, Pa. CTY—Fayette. RR—P. R. R., South West Branch.
PR—Daniel Hunt, Uniontown, Pa.
TR—James W. Buttermon, Connellsville, Pa.
GM—Samuel Cummings, Acme, Pa.
GS—Geo. W. Campbell, 306 E. Green St., Connellsville, Pa.
PA—Geo. W. Campbell, Connellsville, Pa.
MS—Geo. H. Mills.
S of H—Rope, Horses and Steam Loco. Track Gauge 44 in.
S of M—Hand.
PP—1 Water Tube Boiler.
EMP—40. Coke ovens, 40 Bee Hive.

NORTHWESTERN MINING & EXCHANGE CO
General Office, Scranton, Pa.
PR—W. A. May, " "
TR—F. H. Wright, " "
EE—M. E. Walthall " "
GS—John H. Fulford, Dubois, Pa.
EM—Alex. McDonald, " "
PA—W. R. Collins, 50 Church Sa., N.Y.
SCO—J. H. Steele & Co., Dagus Mines Pa. Buyer, R. W. Beadle.
Sales Agents, Williams & Peters, No. 1 Broadway, N. Y.

Dagus Mines, comprising Kyler, Bureka, Toby No. 2 and Toby No. 3, Drifts, "D" Seam 46 to 30 in. thick.
PO—Dagus Mines, Pa., SP—Toby Mines CTY—Elk.
RR—Erie R.R, Toby Branch.
MS—James Whamond, Dagus Mines Pa.
S of H—Mules, rope and 10 elec. loco. track gauge 30 in.
S of M—Pick, and 16 elec. machines.
PP—11 Water tube boilers, total 1700 H.P. 3 gen. units, volts, 600 D. C.
EMP—612, Last fiscal year output 430.262 tons.

Clarion No. 4, Drift, "D" Seam 60 to 28 in. thick.
PO—Crenshaw, Pa., SP—Same, CTY—Jefferson. RR—Erie RR., Toby Br.
MS—H. J. Thomas..Brockwayville, Pa.
S of H—Mules, and 1 steam loco. track gauge 30 in.
S of M—Pick.
EMP—139. Last fiscal year output 94,704 tons.

West Clarion, Drifts, "D" Seam, 18 to 50 in. thick.
PO—Brockwayville, Pa., SP—Same, CTY—Jefferson.
RR—Erie R. R., Toby Branch.
MS—H. J. Thomas, Brockwayville, Pa.
S of H—Mules and 3 elec. loco. track gauge 36 in.
S of M—Pick and 4 elec. machines.
PP—3 Water tube boilers, total 300 H.P. 1 gen. unit, 250 volts, D. C.
EMP—166. Last fiscal year output 139,700 tons.

Eriton Mine, Shaft, "D" Seam, 60 to 108 in. thick.
PO—Jefferson Line, SP—Erton, Pa., CTY—Clearfield.
RR—Erie R.R, Eriton Branch.
MS—E. W. Robertson, Jefferson Line, Pa.
S of H—13 Elec. loco., track gauge 36 in.
S of M—46 comp. air machines.
PP—10 Water tube boilers, total 2000 H. P., 2 gen. units, 500 volts, D.C., 3 air compressors, 5 pumps.
EMP—733. Last fiscal year output 520,621 tons.

NOWAK COAL CO.
Jenkins Mine, Drift; "Bloss" Seam, 3 ft. thick.
PO—Blossburg, Pa. SP—Erie, Pa. CTY—Tioga. RR—N. Y. C. & H. R.
PR—Adam Gruzlewski, .Blossburg, Pa.
TR—Chas. Nowak, " "
S of H—Mules. Track gauge 29 in.
S of M—Hand.
EMP—18. Last fiscal year output 12,200 tons.

OAKES BROS COAL CO.
Oakes Mine, Shaft, Brookville Seam, 36 to 44 in. thick.
PO—Volant, Pa.; SP—Drakes, Pa.; CTY—Lawrence.
RR—P.R.R., Wolf Creek Branch.
PR—W. H. Oakes.....Volant, Pa.
GM—W. H. Oakes, "
GS—W. H. Oakes.....Volant, Pa.
TR—S. Oakes, "
MM—S. Oakes, " "
PA—Jas. Oakes, " "
MS—Jas. Oakes, " "
EM—Jas. Oakes, " "
S of H—Mules; track gauge 37 in.
S of M—Hand and 3 comp. air mach.
PP—2 Return tubular boilers, total 150 H. P., 1 air compressor and 2 pumps.
EMP—47. Last fiscal year output, 28,000 tons.
Sales Agent, W. H. Oakes, Volant, Pa.

OAK RIDGE COAL & COKE CO.
Oak Ridge Nos. 1, 2 and 3 Mines; Drift; L. & Up. Freeport Seam, 36 to 60 in. thick.
PO—Hastings, Pa.; SP—Same; CTY—Cambria.
RR—P.R.R., Cambria & Clearfield Br.
PR—J. S. Moore.....Houtzdale, Pa.
GM—H. J. Van Dusen..Hastings, Pa.
TR—B. R. Lloyd, " "
PA—H. J. Huether, " "
GS—H. J. Huether, " "
EM—Chas. E. Schlicher, " "
SCO—Van Dusen & Co., Hastings, Pa.
S of H—Rope and Mules; track gauge 36 in.
S of M—9 Comp. air mach.
PP—3 Return Tubular Erie boilers, total 330 H. P., 2 compressors.
EMP—215. Coke ovens, 100 Bee Hive. Last fiscal year output, 85,126 tons.

OAK RIDGE MINING CO.
Out of business.

OCEAN COAL CO.
General Office, Commercial Trust Bldg., Philadelphia, Pa.
Ocean Nos. 1 and 2, Shafts. Pittsburgh Seam.
PO—Hermine, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
PR—Edward J. Berwind. No. 1 Broadway, New York N. Y.
TR—E. H. Sanborn, Philadelphia, Pa.
GM—Thomas Fisher, " "
PA—W. W. Whitney, " "
S of H—Mules and 13 Elec. loco.
S of M—Elec. mach.
PP—9 boilers, total 2,000 H. P. gen. unit, 1000 K. W., 500 volts D. C.
EMP—800.

OCTORARO COAL CO.
General Office, Saxton, Pa.
Octoraro No. 1 Mine; Slope; "B" Seam; 30 to 42 in. thick.
PO—Riddlesburg, Pa.; SP—Same; CTY—Bedford; RR—H. & B. T., Six Mile Run Branch.
PR—W. W. Young, Riddlesburg, Pa.
TR—R. H. Kay, Saxton, Pa.
GM—R. H. Kay, " "
GS—R. H. Kay, " "
PA—R. H. Kay, " "
S of H—Elec. loco. and mules.
PP Purchase power.
EMP—8. Developing.

O'DONNELL BROS.
O'Donnell Nos. 1, 2, 3 East and 1, 2, 3, 4 West Mines; Drifts; Blossburg Seam; 30 to 60 in. thick.
PO—Morris Run, Pa.; SP—Same; CTY—Tioga.
RR—N. Y. C., Erie, R.R.
GM—W.F. O'Donnell, Morris Run, Pa.
MS—M. Atkinson, " "
PA—J. F. O'Donnell, " "
S of H—Mules. Track gauge 28 in.
S of M—Hand.
EMP—80. Last fiscal year output, 35,000 tons.

OLIVE COAL CO.
General Office, Uniontown, Pa.
Maggie Mine, Drift, Sewickley Seam 5 to 6 ft. thick.
PO—Newcomer, Pa.; SP—Same; CTY—Fayette.
RR—P.R.R. Coal Lick Branch.
MS—H. J. Huntzinger..Uniontown, Pa.
EM—H. J. Huntzinger, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—1 Erie City return tubular boiler, 150 H. P., 1 pump.
EMP—21. Last fiscal year output, 24,557 tons.
Sales Agent, H. J. Huntzinger, Uniontown, Pa.

OLIVER COAL MINING CO.
PO—Hollidaysburg, Pa.; CTY—Blair.
TR—O. H. Hewit....Hollidaysburg, Pa.
NOTE—Will begin development in the near future.

OLIVER & SNYDER STEEL CO.
General Office, Pittsburgh, Pa. Oliver Nos. 1, 2 and 3 Mines; Shaft, Connellsville Seam, 108 in. thick.
PO—Oliver, Pa. SP Same Redstone Jct. and Thaw, Pa. RR—P. R. R., P., V. & C. Br., B. & O., S. W. Br.
PR—Henry Oliver, S. Tenth and Muriel Sts.....Pittsburgh, Pa.
PA—E. A. Jenkins " "
TR—T. J. Crump " "
GS—J. H. Lane.....Oliver, Pa.
EM—Charles H. Hinsey " "
EE—C. G. Brahm, " "
MM—C. B. Patterson and L. C. Smitley, Uniontown, Pa.
S of H—2 gasoline loco., rope and horses.
S of M—Hand.
PP—31 Erie return tubular boilers; total 1940 H. P.; 2 gen. units, 220 volts DC., 2 compressors, 4 pumps.
EMP—1,100; coke ovens 1,108, Bee Hive. Last fiscal year output 750,000 tons.

OLLETT BROS. COAL CO.
Donora Mine, Drift, Youghiogheny Gas Seam, 5 ft. 10 in. to 6 1-2 ft. thick.
PO—Donora, Pa.; SP— Same; CTY—Washington.
RR—P. R. R., P. V. & C. Branch.
GM—F. B. Ollett.....Donora, Pa.
PA—F. B. Ollett, " "
GS—F. B. Ollett, " "
EM—Henry Winstein, " "
EE—Greer Harvey, " "
SCO—Donora Store Co.; Buyer, R. M. Mears, Dorona, Pa.
S of H—Mules, 1 Elec. loco. and gravity; track gauge 44 in.
S of M—Hand and 3 Elec. machines.
PP—4 pumps; power purchased.
EMP—95. Last fiscal year output, 98,500 tons.
Sales Agent, Fort Pitt Coal & Coke Co., Pgh., Pa.

ORIENT COKE CO.
General Office, Uniontown, Pa.
Orient Mine, Shaft, Pgh. Seam 7 1-2 to 9 ft. thick.
PO—Orient, Pa.; SP—Same; CTY—Fayette.
RR—Monongahela.
PR—Julian Kennedy....Pittsburgh, Pa.
CE—Julian Kennedy, " "
TR—J. O. Miller, " "
GM—R. M. Fry.....Uniontown, Pa.
PA—C. B. Garland, " "
EM—E. C. Baker Co., " "
GS—Charles Oppermann, " "
MM—S. W. Warman, " "
EE—S. W. Warman, " "
SCO—Orient Supply Co., Orient, Pa. Buyer, N. T. Fisher, Orient, Pa.
S of H—8 comp. air loco.; track gauge 44 in.
S of M—Hand and 13 comp. air mach.
PP—6 Water Tube B. & W. boilers, total 1800 H. P., 2 gen. units, 250 D.C. volts, 5 air compressors and 2 pumps.
EMP—500.
Coke ovens—480 Bee Hive.
Sales Agent Producers Coke Co., Uniontown, Pa.

OSCEOLA COAL CO.
Leaders Nos. 4 and 5 Miness; Shaft and Drift; "E" and "B" Seam 48 to 60 in. thick.
PO—Osceola Mills, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R.
PR—T. S. Shoemaker..Philadelphia, Pa.
TR—H. B. Swoope.....Madera, Pa.
GM—H. B. Swoope, " "
PA—H. B. Swoope, " "
MS—John Stevenson, " "
EM—S. R. Moore, " "
EE—J. C. Nolls.....Philipsburg, Pa.
SCO—Leader Supply Co., Buyer, H. S. Kamour, Osceola Mills, Pa.
S of H—Mules; track gauge 42 in.
S of M—6 Elec. mach.
PP—2 Erie Water tube boilers, total 300 H. P., gen. unit 250 volts A. C., 1 pump.
EMP—130. Last fiscal year output, 72,747 tons.

OWENS MINING CO.
See Pennsy Coal Co.

PAN HANDLE MINING CO. (Jno. Blyth)
Do not operate any mines at present.

PANTHER RUN COAL CO.
Panther Run Mine; Drift; L. Freeport Seam; 48 to 72 in. thick.
PO—Pardus, Pa.; SP—Sherwood, Pa.; CTY—Jefferson; RR—P. R. R.
PR—H. S. Thayer.....gway, Pa.
TR—E. P. Newton.....Pardus, Pa.
GM—E. P. Newton, "
PA—E. P. Newton, " "
MS—E. P. Newton, " "
MM—James L. Crawford, " "
EE—W. A. Stanford, " "
EM Sabin & Ganson, Punxsutawney, Pa.
SCO—Pardus Supply Co., E. B. Newton, Buyer, Pardus, Pa.
S of H—5 Elec. loco., track gauge 3 ft.
S of M—4 Elec. and 22 comp. air mach.
PP—5 Return tubular boiler total 750 H. P., 1 gen. unit, 250 volts D. C., 2 compressers and 3 pumps.
EMP—158. Last fiscal year output, 143,727 tons.

PARDOE COAL CO.
General Office, Sharon, Pa.
Pardoe No. 1 and Kee Mines; Drift; Brookville Seam, 2½ to 6 ft. thick.
PO—Pardoe, Pa. SP—Same. CTY—Mercer. RR—B. & L. E.
PR—Frank P. Filer, ... Mercer, Pa.
TR—Harry J. Filer, ... Sharon, "
PA—Harry J. Filer, " "
GM—Frank P. Filer, ...Mercer, Pa.
MS—Enoch W. Filer, Mercer, Pa.
S of H—2 Steam loco. and mules; track gauge 30 in.
S of M—Hand.
PP—4 Return tubular boilers, total 250 H. P. 1 compressor and 2 pumps.
EMP—126. Last fiscal year output, 77,971 tons. Sales Agent, Harry J. Filer, Sharon, Pa.

PARK COAL CO.
Park Mine; Drift; Seam, 42 to 44 in. thick.
PO—Leechburg, Pa.; SP—Same; CTY—Armstrong; RR—P. R. R., Conemaugh Division.
PR—E. E. Ball, Leechburg, Pa.
TR—L. W. Hicks, " "
GM—L. W. Hicks, " "
PA—L. W. Hicks, " "
MS—Thos Gumford, " "
CE—E. A. Watters, " "
S of H—1 Elec. loco.; track gauge, 42 in.
S of M—4 Elec. Mach.
PP—Power purchased.
EMP—50.
Sales Agency, E. E. Ball.

PARKHILL COAL CO.
Ruth Mine; Drift; Freeport Seam, 54 in. thick.
PO—Dawson, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
PR—H. B. Moore, Dawson, Pa.
TR—H B Moore, " "
GM—H. B. Moore, " "
MS—H B Moore, " "
CE—Thos. Zimmerman, " "
MM—B. Shallenberger, " "
EE—B. Shallenberger, " "
S of H—Elec. loco.; track gauge, 42 in.
S of M—1 Elec. Mach.
PP—Gen. Unit, 250 Volts D. C.
EMP—9.
Capacity, 100 tons per day.

PARSHALL, W. J.
General Office, Uniontown, Pa.
Old Home Mine, Shaft and Slope.
PO—McClellandtown, Pa. SP—Leckrone. CTY—Fayette. RR—P. R. R., P. & L. E., B. & O.
GM—W.J.Parshall McClellandtown, Pa.
PA—W. J. Parshall, " "
EM—Fayette Eng. Co..Uniontown, Pa.
MS—Luke Shaw ..McClellandtown, Pa.
MF—John M. Murphy, " "
S of H—Rope and mules.
S of M—6 comp. air mach.
PP—4 boilers, total 600 H. P.
Coke ovens, 100.

PATTON CLAY MANUFACTURING CO.
Patton Shaft, No. 3, Shaft, C Seam 3 ft. 10 in. to 4 ft. 2 in. thick.
PO—Patton, Pa., SP—Same, CTY—Cambria.
RR—N.Y.C. & H.R.R.R.
PR—H. F. Good.....Patton, Pa.
TR—Ralph E. Good, " "
GM—Geo. E. Prindible, " "
PA—Geo. E. Prindible, " "
MS—Dan McMuldrin, " "
CE—John T. Culp, " "
MM—John T. Sulp, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Keeler Water Tube and 1 Keeler return tubular boiler, total 625 H. P.
EMP—52. Last fiscal year output 10,000 tons.

PAUL COAL & SUPPLY CO.
Paul Mine; Drift, Pittsburgh Seam 54 to 68 in. thick.
PO—Pittsburgh, Pa.; SP—West Liberty, Pa.; CTY—Allegheny.
RR—West Side Belt.
PR—J. A. Gormly, Meadowlands, Pa.
TR J. C. Davis, 1756 W. Liberty Av., Pgh., Pa.
GM—J. C. Davis, 1756 W. Liberty Av., Pgh., Pa.
GS—J. C. Davis, 1756 W. Liberty Av., Pgh., Pa.
PA—J. C. Davis, 1756 W. Liberty Av., Pgh., Pa.
S of H Mules track gauge 42 in.
S of M Hand and 1 elec. mining mach
EMP—25. Last fiscal year output 15,240 tons.

PAULTON COAL MINING CO.
General Office, Leechburg, Pa.
Paulton Mine, Slope.
PO—Apollo, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
GM—L. W. Hicks.....Leechburg, Pa.
MS—Wm. Lace .....Vandergrift, Pa.
EM—E. A. Watters, " "
S of H—Mules and tail rope.
S of M—Comp. air and Elec. mach.
PP—3 return tubular boilers, total 600 H. P., 1 air comp., 8 pumps.
EMP—155. Last fiscal year output 104,359 tons.

PAWNEE COAL CO.
Pawnee Mine; Drift; Kittanning Seam, 42 to 48 in. thick.
PO—Brookville, Pa.; SP—Colon, Pa.; CTY—Jefferson RR—P. S. & N.
PR—C. C. Chittester, Brookville, Pa.
TR—J. T. Armstrong, " "
GM—John Chilcott, " "
GS—John Chilcott, " "
MS—Gust Stroud, " "
CE—W. W. Henshey, " "
S of H—Mules and Rope; track gauge, 42 in.
S of M—Hand.
EMP—8.

P. C. & Y. COAL CO.
Drift Mine; Pittsburgh Seam, 68 in. thick.
PO—Crafton, Pa.; SP—Pike Siding, Pa.; CTY—Allegheny; RR—P. C. & Y.
PR—B. S. Hammill, Pittsburgh, Pa.
GM—B. S. Hammill, " "
PA—B. S. Hammill, " "
TR—C. C. McGregor, ...Crafton, Pa.
GS—C. C. McGregor, " "
CE—F. T. Fitzharris, " "
S of H—1 Elec. loco.; track gauge 42 in.
S of M—3 Elec. mach.
PP—Power purchased, gen. unit 250 volts D.C., 3 phase, 2 cycles.
NOTE—Just starting February 15th, 1915.

PEALE, PEACOCK & KERR, INC.
General Office, St. Benedict, Pa.
PR—Rembrandt Peale, Grand Central Terminal, New York, N. Y.
GM—G. E. Metzger..St. Benedict, Pa.
EM—A. M. Dunsmore, " "
SB—Central Trading Corp. Buyer, E. F. Harvey, Philipsburg, Pa.
Nos. 1, 6 and 9 Mines, Drifts.
PO—Winburne, Pa. SP—Same. CTY—Clearfield. RR—N. Y. C. & H. R.
PA—G. E. Metzger..St. Benedict, Pa.
GS—R. H. George.....Winburne, Pa.
S of H—10 elec. locos.
S of M—10 elec. mach.
PP—6 boilers, total 900 H. P., gen. units, 250 volts D. C.
EMP—356.
Decatur Nos. 3, 7 and 8 Mines, Drifts.
PO—Philipsburg, Pa. SP—Same. CTY—Clearfield. RR—N. Y.C. & H. R.
PA—John C. Dunsmore..Philipsburg, Pa.
GS—John C. Dunsmore, " "
S of H—Mules.
S of M—Hand.
Glen Richey Nos. 1, 3, 4, 5, 6, 18 19 and 20 Mines, Drifts.
PO—Glen Richey, Pa. SP—Mitchell's Station, Pa. CTY—Clearfield. RR—N. Y. C. & H. R.
PA—G. E. Metzger ..St. Benedict, Pa.
GS—R. H. George .....Winburne, Pa.
S of H—2 elec. locos., rope and mules.
S of M—4 elec. mach. and hand.
PP—5 boilers, total 750 H. P., gen. units, 250 volts D. C.

PEARCE, GEO., & SON.
Excelsior 1 and 2; Slope and Drift; U. Freeport and L. Kittanning; 4 ft. thick.
Continued on Next Page.

PEARCE, GEO., & Son—Continued.
PO—Puritan, Pa.; SP—Portage, Pa.; CTY—Cambria.
RR—P.R.R., Portage Branch.
GM—Robert Pearce.....Puritan, Pa.
PA—Robert Pearce, " "
MS—T. J. Pearce.....Portage, Pa.
EM—J. Sillyman & Co. .. Altoona, Pa.
SCO—Union Supply Co.; Buyer, A. G. Groke, Puritan, Pa.
S of H—Ropes and mules; track gauge 36 in.
PP—2 tubular boilers total 150 H.P.
Sales Agent, G. W. Clark, Altoona, Pa.

PEARCE, JOSEPH L., COAL CO.
Budd Mine; Drift; Pittsburgh Seam; 6 ft. thick.
PO—Webster, Pa.; CTY—Westmoreland.
RR—P. & L. E.
MS—Jos. L. Pearce....Webster, Pa.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—1 water tube boiler,, 50 H. P.
EMP—40. Last fiscal year output, 42,113 tons.

PEERLESS COAL MINING CO.
General Office, Pennsylvania Bldg., Philadelphia, Pa.
Peerless No. 1; Drift; Miller Seam; 3 ft. thick.
PO—El Mora, Pa.; SP—Bakerton, Pa. CTY—Cambria.
RR—P.R.R., C. & C. Branch.
GM—John Wills.....Philadelphia, Pa.
PA—J. R. Hayes,.. ..El Mora, Pa.
MS—J. R. Hayes, " "
S of H—Mules.
S of M—Hand.
EMP—29. Last fiscal year output, 14,328 tons.
Sales Agent, John Wills, 703 Pennsylvania Bldg., Philadelphia, Pa.

PENFIELD COAL & COKE CO.
General Office, Penfield, Pa.
PR—S. C. Denham, Clarksburg, W.Va.
TR—V. L. Highland, " "
GM—L. W. Smith.....Penfield, Pa.
SCO—Penfield Supply Co., Buyer, J. Robt. Wynn, Penfield, Pa.
Sales Agent, L. W. Smith, Penfield, Pa.

Penfield No. 1, Drift, B or Lower Kittanning Seam, 3 ft. thick.
PO—Penfield, Pa., SP—Same CTY—Clearfield.
RR—P.R.R.
MS—Hugh Wheeling.....Penfield, Pa.
S of H—3 Elec. loco., track gauge 36 in.
S of M—Hand.
PP—2 Water tube boilers, total 300 H. P.
EMP—140.

Coalville No. 2, Drift. B or Lower Kittanning Seam; 36 in. hick.
PO—Weedville, Pa., SP—Same, CTY—Elk.
RR—P.R.R.
MS—Harry Harley.....Weedville, Pa.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—1 water tube boiler, 80 H. P.
EMP—125.

PENKER COAL CO.
General Office, Houtzdale, Pa.
Penker Mine No. 1, Drift, Miller or "B" Seam 3 ft. 8 in. to 4 ft. 6 in. thick.
PO—Portage, Pa.; SP—Same; CTY—Cambria.
RR—P.R.R.
PR—Michael Burns....Houtzdale, Pa.
TR—Harry Boulton, " "
GM—H. M. McAlarney..Portage, Pa.
GS—H. M. McAlarney, " "
PA—H. M. McAlarney, " "
EM—Jos. Sillyman.....Altoona, Pa.
S of H—Gravity Incline and mules; track gauge 42 in.
S of M—Hand.
EMP—60. Last fiscal year output 58,100 tons.

PENN COKE CO.
Penn No. 3 Mine, Drift.
PO—Uniontown, Pa. SP—Smithfield, Pa. CTY—Fayette. RR—B. & O.
GS—N. H. Hankins....Smithfield, Pa.
S of H—Mules.
S of M—Hand.
PP—1 boiler, 60 H. P.
State report.

PENN GAS COAL CO
General Office, Philadelphia, Pa.
GS—J. J. Collier .....Irwin, Pa.
PA—W. F. Gallagher, " "

Penn No. 2 Mine, Shaft and Slope, Pgh. Seam.
PO—Irwin, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—E. J. Williams.....Irwin, Pa.
S of H—4 Comp. air locos.
S of M—13 comp. air machines.
PP—6 boilers, total 1,508 H. P., 4 air comp., 3 pumps.
EMP—439. Last fiscal year output 524,997 tons.

Penn No. 3 Mine, Shaft and Slope, Pgh. Seam.
PO—Lowber, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—J. Rymer .....Lowber, Pa.
S of H—1 steam and 4 elec. locos.
S of M—12 elec. and 8 comp. air machines.
PP—9 return tubular boilers, total 1,350 H. P., 3 air comp, 3 pumps.
EMP—356. Last fiscal year output 507,604 tons.

Penn No. 5 Mine, Shaft and Slope, Pgh. Seam.
PO—Penn Sta., Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—J. R. Smith.....Penn Sta., Pa.
S of H—2 comp. air and 1 steam locos.
S of M—9 elec. machines.
PP—4 pumps.
EMP—242. Last fiscal year output 349,950 tons.

PENN MARY COAL CO.
General Office, Morris Bldg., Philadelphia, Pa.
Penn Mary Nos. 1, 2 and 7 Mines; Drifts; D. or L. Freeport Seam; 36 to 48 in. thick.
PO—Heilwood, Pa.; SP—Same; CTY—Indiana; RR—P. R. R. & N. Y. C.
PR—E. C. Felton....Philadelphia, Pa.
TR—E. Stuart, " "
PA—W. B. Enck, " "
GM—E. E. Slick.....Johnstown, Pa.
GS—H. J. Meehan.....Heilwood, Pa.
EM—Jam s Meehan, " "
MM—Wm. Mildon, " "
MS—Charles Severen, " "
SCO—The Hellwood Co., Buyer J. M., Thompson, Heilwood, Pa.
S of H—15 Elec. loco., track gauge 42 in.
S of M—Hand and 40 Elec. mach.
PP—6 Return tubular boilers, total 1800 H. P., 4 gen. units, 2200 volts A. C., 3 phase, 60 cycles, 250 volts D. C., 2 pumps.
EMP—750. Last fiscal year output, 574,427 tons.

PENN SMOKELESS COAL CO.
General Office, First National Bank Bldg., Pittsburgh, Pa.
Higasota Mine; Slope; "C" Seam, 54 to 72 in. thick.
PO—Jerome, Pa.; SP—Same; CTY—Somerset; RR—B. & O., Jerome Branch.
PR—Thurston Wright, Pittsburgh, Pa.
TR—John Gibson, Jr., " "
GM—John Gibson, Jr., " "
PA—John Gibson, Jr., " "
MS—C. M. Woy, Jerome, Pa.
S of H—Not yet installed.
S of M— " " "
PP—Power to be purchased.

PENNSY COAL CO.
General Office, Franklin, Pa.
PR—Geo. C. Miller ....Franklin, Pa.
TR—Geo. P. Cronk, " "
PA—Geo. P. Cronk, " "
GS—A. N. Cole .....Clarion, Pa.
GM—A. N. Cole, " "
EM—T. J. Lawrence.....Clarion, Pa.
SCO—The Peoples Supply Co., Ltd. Buyer, Geo. Getty, Summerville, Pa.
Sales agent, Geo. P. Cronk, Franklin, Pa.

Wilson No. 2 Mine, Drift, Lower Kittanning Seam, 32 to 48 in. thick.
PO—Clarion, Pa. SP—Elss, Pa. CTY—Clarion. RR—L. E. F. and C.
MS—John Dayton .....Clarion, Pa.
S of H—Rope and mules. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 250 H. P., 1 air comp., 1 pump.
EMP—48. Last fiscal year output, 46,539 tons.

Rodgers No. 3 Mine, Drift, Lower Kittanning Seam, 32 to 48 in. thick.
PO—Clarion, Pa. SP—Rodgers, Pa. CTY—Clarion. RR—L. E. F. and C. R. R.
MS—Wm. Mudill ....Strattonville, Pa.
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand, 4 Elec. and 4 comp air mach.
PP—2 Phoenix return tubular boilers, total 300 H. P., 1 gen. unit, 275 volts D. C., 1 air comp., 2 pumps.
EMP—104. Last fiscal year output, 76,644 tons.

Cronk No. 5 Mine, Slope, Lower Kittanning Seam, 32 to 38 in. thick.
PO—Clarion, Pa. SP—Cronk, Pa. CTY—Jefferson; RR—L. E. F. & C.
MS—James Wyse ....Summerville, Pa.
S of H—Mules. Track gauge 36 in.
S of M—Hand and 5 Elec. mach.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit, 275 volts D. C., 2 pumps.
EMP—109. Last fiscal year output, 91,631 tons.

Hilltop No. 6 Mine; Slope; Lower Kittanning Seam, 30 to 36 in. thick.
PO—Clarion, Pa. SP—Carrier, Pa. CTY—Jefferson; RR—L. E. F. & C;
MS—W. D. Brooks...Summerville, Pa.
S of H—Mules. Track gauge 36 in.
S of M—Hand and 4 Elec. mach.
PP—1 pump, power furnished from No. 5 Mine.
EMP—64. Last fiscal year output, 44,349 tons.

Dayton No. 10 Mine; Drift; Brookville Seam; 54 to 72 in. thick.
PO—Summerville, Pa.; SP—Carrier, Pa. CTY—Jefferson; RR—L. E F. & C.
MS—D. J. Lewis.....Summerville, Pa.
S of H—Mules, rope and Steam loco.; track gauge 36 in.
S of M—6 Comp. air mach.
PP—3 Return tubular boilers, total 300 H. P., 1 comp. 3 pumps; also purchase power.
EMP—104. Last fiscal year output, 48,657 tons.

Owens No. 8 Mine, Shaft, Lower Kittanning Seam, 32 to 38 in. thick.
PO—Clarion, Pa. SP—Owens, Pa. CTY—Clarion. RR—L. E. F. & C.
MS—Wm. Maloney ..Strattonville, Pa.
S of H—Mules. Track gauge 40 in.
S of M—Hand and elec. mach.
PP—2 return tubular boilers, total 175 H. P., 2 pumps, power furnished from No. 3 Mine.
EMP—50. Last fiscal year output, 22,-120 tons.

PENNSYLVANIA COAL & COKE CORPORATION.
General Office, 17 Battery Place, New York, N. Y.
PR—T. H. Watkins, New York, N.Y.
GM—T. H. Watkins, " "
TR—A. G. Edwards..New York, N.Y.
PA—S. W. Clark.....Cresson, Pa.
EM—H. H. Hasler, " "
EE—A. J. Varrelmann, " "
Sales Mgr. J. W. Searles, 17 Battery Place, New York, N. Y.

Ben's Creek Mine No. 1; Drift; L. Kittanning Seam.
PO—Ben's Creek, Pa.; SP—Same; CTY Cambria.
RR—P.R.R.
MS—R. D. Mainwaring..Cresson, Pa.
Last fiscal year output 41,973 tons.

Ehrenfeld No. 3 and 8; Drift; L. Kittanning Seam and Up. Freeport.
PO—Ehrenfeld, Pa.; SP—Summerhill, Pa.; CTY—Cambria.
RR—P.R.R.
MS—W. B. Alexander..Ehrenfeld, Pa.
S of H—18 elec. loco.
S of M—25 elec. and 8 comp. air mach.
PP—5 boilers total 1250 H. P., 6 gen. units, 1 air compressor and 3 pumps.
EMP—586. Last fiscal year output 275,715 tons.

Amsbry No. 7 and 16 Mines; Drift; Up. Freeport Seam.
PO—Amsbry, Pa.; SP—Same, CTY—Cambria; RR—P. R. R.
MS—R. D. Mainwaring..Cresson, Pa.
S of H—2 Elec. loco.
S of M—6 elec. mach
PP—2 Boilers, total 500 H. P., 1 gen. unit 250 volts, D. C., 2 pumps.
EMP—108. Coke ovens 55; Bee Hive. Last fiscal year output 14,340 tons.

Cresson No. 9 Mine; shaft; Up. Freeport and L. Kittanning.
PO—Cresson, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
MS—R. D. Mainwaring...Cresson Pa,
S of H—4 elec. loco.
S of M—19 elec. mach.
PP—6 boilers total 900 H. P., 5 gen. units and 3 pumps.
EMP—184. Coke ovens, 100. Last fiscal year output 62,706 tons.

Gallitzin Mine No. 10; Slope; Up. Freeport Seam.
PO—Gallitzin, Pa.; SP—Same; CTY—Cambria.
RR—P.R.R.
MS—R. D. Mainwaring...Cresson Pa,
S of H—8 elec. loco.
S of M—19 elec. mach.
PP—3 boilers total 475 H. P., 2 gen. units and 2 pumps.
EMP—458. Coke ovens, 400. Last fiscal year output 224,389 tons.

Hastings Nos. 11, 12, 13 and 20 Mines; Drift; L. Freeport, Seam.
PO—Hastings, Pa.; SP—Same; CTY—Cambria.
MS—J. R. Nicholson..Marsteller, Pa.
S of H—2 elec. loco.
S of M—9 elec. and 12 comp. air mach.
PP—7 boilers total 915 H.P., 2 gen. units 250 volts D. C., 2 air compressors and 1 pump.
EMP—356. Coke ovens, 152, Bee Hive Last fiscal year output 145,441 tons.

Nant-Y-Glo No. 14 Mine; Drift; L. Kittanning.
PO—Nant-Y-Glo, Pa; SP—Same.; CTY Cambria; RR—P. R. R.
MS—W. B. Alexander..Ehrenfeld, Pa.
S of H—4 elec. loco.
S of M—26 comp. air mach.
PP—5 boilers, total 650 H. P., 2 gen. units, 2 air compressors and 2 pumps.
EMP—213. Last fiscal year output 106,222 tons.

Beaverdale Mine No. 15; Shaft; L. Kittanning Seam.
PO—Beaverdale, Pa.; SP—Same; CTY Cambria; RR—P. R. R.
MS—W. B. Alexander..Ehrenfeld, Pa.
S of H—4 elec. loco.
S of M—7 elec. mach.
PP—5 boilers total 700 H. P., 2 gen. units and 1 boiler.
EMP—192. Last fiscal year output 36,297 tons.

Bennington No. 19 Mine; Slope; Up. Freeport Seam.
PO—Bennington, Pa.; SP—Same; CTY Blair. RR—P. R. R.
MS—R. D. Mainwaring...Cresson Pa,
PP—2 boilers, total 225 H. P.
EMP—51. 50 Bee Hive coke ovens.
Last fiscal year output 17,268 tons.

Moss Creek Nos. 21, 22; Drift; L. Freeport Seam.
PO—Marsteller, Pa.; SP—Spangler; CTY—Cambria; RR—N.Y.C. & H.R.
MS—J. R. Nicholson..Marsteller, Pa.
S of H—5 elec. loco.
S of M—13 elec. mach.
PP—3 boilers, total 700 H. P., 3 gen. units and 1 pump.
EMP—332. Coke ovens 180 Bee Hive.
Last fiscal year output 236,800 tons.

Spangler No. 25 Mine; Drift; L. Freeport Seam.
PO—Spangler, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
MS—J. R. Nicholson..Marsteller, Pa.
S of M—3 comp. air mach.
PP—2 boilers, total 120 H. P., 2 air compressors and 1 pump.
EMP—61. Last fiscal year output 11,395 tons.

Pardee Nos. 27, 28, 29, 39, 50, Flanagan Nos. 30, 36, Moshannon No. 33, 37, Ashcroft Nos. 34 and 35.
PO—Patton, Pa.; SP—Same; CTY—Cambria; RR—N. Y. C. & H. R.
MS—A. O. Sommerville...Patton, Pa.
S of H—6 elec. loco.
S of M—54 elec. and comp. air mach.
PP—18 boilers, total 12870 H. P., 5 gen. units 11 pumps.
EMP—118. Last fiscal year output 551,521 tons.

Arcadia Nos. 40, 41, 42, 43, 44; Drift; Up. Freeport and L. Kittanning Seam.
PO—Arcadia, Pa. SP—Same; CITY—Indiana; RR—N.Y.C & H.R.
MS—A. O. Sommerville.....Patton, Pa.
S of H—3 Elec. and 3 steam loco.
S of M—3 Elec. mach.
PP—5 Boilers total 360 H.P.; 1 gen. unit and 2 pumps.
EMP—561. Last fiscal year output, 231,545 tons.

Winburne Nos. 45, 46, 47; Drift; Up. Freeport Seam.
PO—Winburne, Pa. SP—Same; CITY—Clearfield; RR—N.Y.C. & H.R.
MS—A. O. Sommerville.....Patton, Pa.
S of H—13 Elec. loco.
S of M—10 Elec mach.
PP—6 Boilers, 900 H.P., 2 gen. units 250 volts D.C. 11 pumps.
EMP—321. Last fiscal year output, 209,304 tons.

PENNSYLVANIA SALT MFG. CO.
General Office 115 Chestnut St., Philadelphia, Pa.
Natrona No. 1 Mine, Drift; Upper Freeport" Seam, 4 to 4½ ft. thick.
PO—Natrona, Pa. SP—Same. CTY—Allegheny. RR—P.R.R, Conemaugh Div.
PR—Theo. Armstrong, Philadelphia, Pa.
TR—A. E. Rice, " "

GM—E. F. Armstrong,.. Natrona, Pa.
PA—J. E. Hutchinson, " "
MS—A. A. Mitchell, " "
SM—J. M. Stephenson, " "
S of H—3 Electric Locomotives. Track gauge 36 in.
S of M—7 Electric Machines.
PP—1 pump. Power from Chemical Works.

PENNSYLVANIA SMOKELESS COAL CO.
See Victor Coal Mining Co.

PETERS CREEK GAS COAL CO.
General Office, Oliver Bldg., Pgh., Pa.
Pine Fork Mine; drift, Pgh. Seam, 66 to 68 in. thick.
PO—Finleyville, Pa.; R. F. D. No. 1; SP—Wilson, Pa. CTY—Washington. RR—P. R. R., Peters Creek Br.
PR—C. W. Braznell....Pittsburgh, Pa.
GM—C. W. Braznell " "
PA—C. W. Braznell " "
TR—R. A. Braznell " "
MS—Carl W. Braznell...Finleyville, Pa.
EM—F. M. Boyd " "
EE—Jake Byers " "
SCO—Piney Fork Supply Co.; Buyer, John W. Conwell, Finleyville, Pa. Pa.
S of H—1 Elec loco; track gauge 42 in.
S of M—2 Elec. mach.
PP—1 return tubular boiler; 125 H. P.; 1 pump.
EMP—70. Last fiscal year output 55,000 tons.

PINE RUN COAL CO.
Nos. 1, 3 and 5 Mines; Drifts; Freeport Seam, 4 to 8 ft. thick.
PO—New Bethlehem, Pa.; SP—Hawthorn, Pa.; CTY—Clarion; RR—Pine Run.
PR—J. A. Beam, New Bethlehem, Pa.
PA—J. A. Beam, " "
GS—W. C. Beam, " "
TR—F. B. Layton.....Boston, Mass.
EM—A. L. Bouton.....DuBois, Pa.
S of H—One elec. and one gasoline loco.; track gauge 42 in.
S of M—Elec. and hand.
PP—2 Erie return tubular boilers, total 300 H.P.; gen. unite 250 volts D.C.
Output at present 1,600 tons.

PINE RUN COAL & COKE CO.
Pine Run No. 2 Mine, Slope.
PO—Vandergrift, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
GM—L. W. Hicks.....Leechburg, Pa.
MS—Wm. Lace .....Vandergrift, Pa.
EM—E. A. Watters ....Leechburg, Pa.
S of H—Elec. locos.
S of M—Elec. mach.
PP—2 return tubular boiler, total 300 H. P., 1 engine, 1 pump.
EMP—65.

PIONEER COAL CO
See Empire Coal Mining Co.

PIPER, W H & CO
General Office, Real Estate Trust Bld'g., Philadelphia, Pa.
Sonman Nos. 2 and 4 Mines; Drift and slope "B" or Miller, Seam 3½ ft. thick.
PO—Lilly, Pa. SP—Same. CTY—Cambria. RR—P. R. R. Lilly Branch.
GM—W. D. Piper.....Philadelphia, Pa.
MS—Joseph Appleyard, Lilly, Pa.
S of H—Mules and rope, track gauge 42 in. and 36 in.
S of M—Hand.
PP—4 Water tube Stirling boilers, total 750 H.P. 1 gen. unit 250 volts D.C., 2 compressors and 3 pumps. Last fiscal year output, 275,726 tons.

PITT GAS COAL CO.
General Office, 707 Oliver Bldg., Pittsburgh, Pa.
Slope Mine, Pittsburgh Seam, 7 ft. thick.
PO—Millsboro, Pa.; SP—Bosco, Pa.; CTY—Washington; RR—P. R. R., P. V. and C. Branch.
PR—W. Y. Humphreys....Pittsburgh, Pa.
GM—W. Y. Humphreys, " "
TR—W. Y. Humphreys, " "
PA—Hiram Harris, " "
EM—Geo. S. Baton & Co., " "
EE—Randolph-Means Co., " "
MS—T. F. Springer.....Millsboro, Pa.
S of H—Mules.
S of M—2 Elec. mach.
PP—Power purchased, 1 pump.
EMP—70.
Sales Agency, W. H. Warner Co., Cleveland, O.

PITTSBURGH & BALTIMORE COAL CO.
General Office, Pittsburgh, Pa.
Jas. D. O'Neil, R. P. Watt, Wm. K. Johnson, Receivers
PA—J. I. Boyd, Pittsburgh, Pa.
GM—E. L. Morris.....Pittsburgh, Pa.
GS—E. L. Morris.....Pittsburgh, Pa.
EM—H. M Schmidt, " "
SCO—Penn Mercantile Co., Buyer, H. D. Bittner, Pittsburgh, Pa.
Buyer, H. D. Bittner, Pittsburgh, Pa.
Edna No. 1 Mine; Slope; Pgh. Seam, 6 to 7 ft. thick.
PO—Adamsburg, Pa.; SP—Irwin, Pa. CTY—Westmoreland. RR—B. & O.
MS—A. A. Allen..... Wendel, Pa.
SM—R. G. Williams, " "
S of H—Mules, rope, gravity and 5 Elec. loco.; track gauge 42 in.
S of M—10 Elec. machines.
PP—4 Erie City return tubular boilers, total 600 H.P. 2 Gen. units 500 Volts, D.C. 1 pump. (Purchase about one-half power.)
EMP—375. Last fiscal year output 173,000 tons.

Edna No. 2, Shaft, Pittsburgh Seam, 6 to 7ft thick.
PO—Wendel, Pa.; SP—Same; CTY—Westmoreland; RR—B. & O.
MS—A. A. Allen.....Wendel, Pa.
SM—W. B. Clark, " "
S of H—Animal, and 4 Elec. loco. Track gauge 42 in .
S of M—11 Electric machines.
PP—8 Erie City return tubular boilers, total 1,200 H.P. 1 Gen. unit 500 volts D.C. 2 pumps. also purchase power.
EMP—525. Last fiscal year output 235,000 tons.

PITTSBURGH-BUFFALO COAL CO.
General Office, Frick Bldg., Pgh, Pa.; Receiver, J. W. Ailes, Pgh, Pa.
GM—J. W. Ailes.....Pittsburgh, Pa.
PR—John H. Jones " "
TR—Sam E. Jones " "
PA—Martin McDermott " "
CE—A. C. Beeson Canonsburg, Pa.
EM—A. S. Pollock " "
GS—Harris T. Booker....Marianna, Pa.
MM—M. S. Christy " "
EE—J. K. Jones " "
SCO—White Rock Supply Co., Pgh., Pa.; Sales Agency, M. A. Hanna Co., Cleveland, O.
Hazle Mine, Slope, Pgh. Seam, 68 to 72 in. thick.
PO—Canonsburg, Pa. SP—Same. CTY—Washington; RR—P. R. R. Chartiers Br.
MS—Wm. Adams.....Canonsburg, Pa.
S of H—18 Elec loco. and endless rope; Track gauge 46 in.
S of M—28 Elec. mach.
PP—16 Erie return tubular boilers; total, 2,400 H. P.; 2 gen units, 300 volts D. C., 2,200 volts A. C., to operate 2 500 K. W. gen. sets, 1 compressor, 6 pumps. Power also furnished to operate gen. sets.
EMP—650. Last fiscal year output 550,000 tons.

Rachel Mine, Shaft, Pgh. Seam, 72 to 78 in. thick; operate washery.
PO—Marianna, Pa. SP—Same. CTY—Washington. RR—P. R. R.
MS—Harris T. Booker..Marianna, Pa.
S of H—25 Comp., air loco., track gauge 48 in.
S of M—35 comp. air mach.
PP—7 Water tube boilers, total 3,500 H. P., 1-500 K. W., 300 volts, 4 compressors, 8 pumps.
EMP—800 coke ovens, 160 Bee Hive. Last fiscal year output 600,000. 160 Bee Hive Coke Ovens.

Francis Mine, Slope, Pgh. Seam, 58 to 60 in. thick.
PO—Burgettstown, Pa. SP—Same. CTY—Washington. RR—P. R. R., Panhandle Div.
MS—J. C. Nairne....Burgettstown, Pa.
S of H—3 Elec. loco. and mules.
S of M—12 Elec mach.
PP—4 Water tube boilers, total 1,000 H. P.; 2 gen. units, 300 volts D. C., 300 K. W.; 2 compressors, 17 pumps.
EMP—440. Last fiscal year output 390,000 tons.

Bertha Mine, Drift, Pgh. Seam, 70 to 72 in. thick.
PO—Bruceton, Pa. SP—Same. CTY—Allegheny. RR—B. & O.
MS—W. L. McCoy.....Bruceton, Pa.
S of H—3 Elec. loco and mules.
S of M—10 Elec. mach.
PP—4 Erie return tubular boilers, total 600 H. P., 2 gen. units 300 volts D. C., 300 K W., 6 elec pumps.
EMP—300. Last fiscal year output 240,000 tons.

PITTSBURGH COAL CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
PR—W. K. Field ....Pittsburgh, Pa.
TR—Wm. Miller, " "
GM—G. W. Schluederberg, " "
GM Asst—J. M. Armstrong, " "
EM—E. J. Taylor, " "
EE—A. B. Kiser, " "
PA—F. E. Now, " "

Allison Mine, Drift, Pgh. Seam.
PO—Houston, Pa. SP—Meadowlands, Pa. CTY—Washington. RR—P. C. C. & St. L.
MS—W. A. Lockhart....Houston, Pa.
S of H—1 elec. loco.
S of M—10 elec. mach.
PP—3 return tubular boilers, total 450 H. P., gen. units, 500 volts D. C. and 2 pumps.

Arnold No. 2 Mine, Shaft, Pgh. Seam.
PO—Arnold City, Pa. SP—Fayette City, Pa. CTY—Fayette. RR—P. & L. E.
MS—H. M. White.....Arnold City, Pa.
S of H—3 elec. locos.
S of M—2 elec. mach.
PP—6 return tubular boilers, total 900 H. P., gen. units, 500 volts D. C. and 4 pumps.
EMP—514. Last fiscal year output 272,780 tons.

Banning No. 1 Mine, Slope, Pgh. Seam.
PO—Van Meter, Pa. SP—Jacobs Creek Scales, Pa. CTY—Westmoreland. RR—P. & L. E.
MS—David Ferguson....Van Meter, Pa.
S of H—3 elec. locos.
S of M—13 elec. mach.
PP—4 return tubular boilers, total 600 H. P., 3 gen. units, 500 volts D. C. and 1 pump.
EMP—450. Last fiscal year output 285,324 tons.

Banning No. 2 Mine, Slope.
PO—Whitsett, Pa. SP—Whitsett Junction, Pa. CTY—Fayette. RR—P. & L. E.
MS—C. M. Snyder.....Whitsett, Pa
S of H—4 elec. locos.
S of M—17 elec. mach.
PP—10 return tubular boilers, total 1,500 H. P., gen. units, 500 volts D. C. and 2 pumps.
EMP—661. Last fiscal year output 521,681 tons.

Banning No. 3 Mine, Slope, Pgh. Seam.
PO—Van Meter, Pa. SP—Jacobs Creek Scales Pa. CTY—Westmoreland. RR—P. & L. E.
MS—David Ferguson....Van Meter, Pa.
S of H—2 elec. locos.
S of M—13 elec. mach.
PP—4 return tubular boilers, total 600 H. P., 3 gen units, 500 volts D. C.
EMP—426. Last fiscal year output 200,794 tons.

Bridgeville Mine, Drift, Pgh. Seam.
PO—Bridgeville, Pa. SP—Same. CTY—Allegheny. RR—P. C. C. & St. L.
MS—S. P. McCaffrey...Bridgeville, Pa.
S of H—2 elec. locos.
S of M—11 elec. mach.
PP—Central plant, gen. units, 500 volts D. C., 2 pumps.
EMP—424. Last fiscal year output 330,448 tons.

Brier Hill Mine, Drift, Pgh. Seam.
PO—McDonald, Pa. SP—Same. CTY—Washington. RR—P. C. C. & St. L.
MS—Jas. Davidson.....McDonald, Pa.
S of H—1 elec. loco.
S of M—Elec. mach.
PP—Central plant, gen. units, 500 volts D. C., 3 pumps.

Champion Mine, Drift, Pgh. Seam.
PO—McDonald, Pa. SP—Sturgeon, Pa. CTY—Washington. RR—P. C. C. & St. L.
MS—Jas. Davidson ....McDonald, Pa.
S of H—1 elec. loco.
S of M—12 elec. mach.
PP—3 return tubular boilers, total 450 H. P., gen. units, 500 volts D. C. 6 pumps.
EMP—489. Last fiscal year output 164,235 tons.

Creedmoor Mine, Shaft, Pgh. Seam.
PO—Cecil, Pa. SP—Same. CTY—Washington. RR—P. C. C. & St. L.
MS—Dan Davis.....Cecil, Pa.
S of H—2 elec. locos.
S of M—13 elec. mach.
PP—9 return tubular boilers, total 1,350 H. P., 5 gen. units, 500 volts D. C. and 1 pump.
EMP—298. Last fiscal year output 114,709 tons.

Dickson Mine, Drift, Pgh. Seam.
PO—Imperial, Pa. SP—Cliff Mine, Pa. CTY—Allegheny. RR—Montour.
MS—Howard Burns.....Imperial, Pa.
S of H—1 elec. loco.
S of M—10 elec. mach.
PP—2 return tubular boilers, total 300 H. P., gen. units, 500 volts D. C. and 4 pumps.
EMP—354. Last fiscal year output 245,972 tons.

Equitable Mine, Drift, Pgh. Seam.
PO—Webster, Pa. SP—Same. CTY—Westmoreland. RR—P. & L. E.
MS—R. H. Nicholas.....Webster, Pa.
S of H—1 elec. loco.
S of M—9 elec. mach.
PP—Power purchased, gen. units, 500 volts D. C. and 3 pumps.
EMP—114. Last fiscal year output 316,566 tons.

Essen No. 3 Mine, Drift, Pgh. Seam.
PO—Burdine, Pa. SP—Same. CTY—Allegheny. RR—P. C. & Y.
MS—J. M. Sloan .....Burdine, Pa.
S of H—2 elec. locos.
S of M—16 elec. mach.
PP—8 return tubular boilers, total 1,200 H. P., 7 gen. units, 500 volts D. C. and 3 pumps.
EMP—110. Last fiscal year output, 254,707 tons.

Euclid Mine, Shaft, Pgh. Seam.
PO—Fitz Henry, Pa. SP—Same. CTY—Westmoreland. RR—B. & O.
MS—Wm. Bower ....Fitz Henry, Pa.
S of H—2 elec. locos.
S of M—10 elec. mach.
PP—5 return tubular boilers, total 750 H. P., 6 gen. units, 500 volts D. C. and 1 pump.
EMP—266. Last fiscal year output 176,697 tons.

Eureka Mine, Drift, Pgh. Seam.
PO—Smithton, Pa. SP—Same. CTY—Westmoreland. RR—B. & O.
MS—Samuel McKay, ...Smithton, Pa.
S of H—1 elec. loco.
S of M—8 elec. mach.
PP—3 return tubular boilers, total 450 H. P., 3 gen. units, 500 volts D. C. and 5 pumps.
EMP—337. Last fiscal year output 237,701 tons.

Fair Haven Mine, Drift, Pgh. Seam.
PO—Broughton, Pa. SP—Horning, Pa. CTY—Allegheny. RR—W. S. B.
MS—Jas. Porter, ... Broughton, Pa.
S of H—5 elec. locos.
S of M—7 elec. mach.
PP—5 return tubular boilers, total 500 H. P., gen. units, 500 volts D. C. and 3 pumps.
EMP—209. Last fiscal year output, 116,959 tons.

First Pool No. 1 Mine, Drift, Pgh. Seam.
PO—Willock, Pa. SP—Same. CTY—Allegheny. RR—B. & O.
MS—H. D. Thomason....Willock, Pa.
S of H—1 elec. loco.
S of M—6 elec. mach.
PP—Power purchased, gen. units, 500 volts D. C. and 3 pumps.

First Pool No. 2 Mine, Shaft, Pgh. Seam.
PO—Willock, Pa. SP—Same. CTY—Allegheny. RR—B. & O.
MS—H. D. Thomson ....Willock, Pa.
S of H—2 elec. locos.
S of M—13 elec. mach.
PP—5 return tubular boilers, total 850 H. P., gen. units, 500 volts D. C. and 5 pumps.
EMP—600. Last fiscal year output 459,040 tons.

Forest Hill Mine, Drift, Pgh. Seam.
PO—Smithdale, Pa. SP—Same. CTY—Allegheny. RR—P. & L. E.
MS—Carl Fetkenhaur.....Smithdale, Pa.
MS—R. C. Smith.....Smithdale, Pa.
S of H—3 elec. locos.
S of M—10 elec. mach.
PP—Central plant. 2 pumps.
EMP—384. Last fiscal year output 214,146 tons.

Idlewood Mine, Drift, Pgh. Seam.
PO—Loupurex, Pa. SP—Crafton, Pa. CTY—Allegheny. RR—P. C. C. & St. L.
MS—Emil Gerry.....Loupurex, Pa.
S of H—1 elec. loco.
S of M—7 elec. mach.
PP—3 return tubular boilers, total 450 H. P., gen. units, 500 volts D. C.
EMP—157. Last fiscal year output 133,645 tons.

Jumbo Mine, Drift, Pgh. Seam.
PO—McDonald, Pa. SP—Same. CTY—Washington. RR—P. C. C. & St. L.
MS—Thos. Kagle.....McDonald, Pa.
S of H—2 elec. locos.
S of M—19 elec. mach.
PP—9 return tubular boilers, total 900 H. P., gen. units, 500 volts D. C. and 2 pumps.
EMP—565. Last fiscal year output 260,208 tons.

Grant Mine, Drift, Pgh. Seam.
PO—Loupurex, Pa. SP—Carnegie, Pa. CTY—Allegheny. RR—P. C. C. & St. L.
MS—Emil Gerry.....Loupurex, Pa.
S of H—2 elec. locos.
S of M—10 elec. mach.

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PITTSBURGH COAL CO.—Continued.
PP—4 return tubular boilers, total 600 H. P., gen. units, 500 volts D. C.

Harrison Mine, Drift, Pgh. Seam.
PO—Beadling, Pa. SP—Same. CTY—Allegheny. RR—P. C. & Y.
MS—W. H. Linsley.....Beadling, Pa.
S of H—4 elec. locos.
S of M—14 elec. mach.
PP—Power purchased and obtained from central plant, gen. units, 500 volts D. C.
EMP—490. Last fiscal year output 340,120 tons.

Laurel Hill No. 2 Mine, Shaft, Pgh. Seam.
PO—Cecil, Pa. SP—Relssing, Pa. CTY—Washington. RR—P. C. C. & St. L.
MS—Dan Davis.....Cecil, Pa.
S of H—2 elec. loco.
S of M—11 elec. mach.
PP—4 return tubular boilers, total 600 H. P., gen. units, 500 volts D. C. and 1 pump.
EMP—370. Last fiscal year output 144,429 tons.

Laurel Hill No. 5 Mine, Shaft, Pgh. Seam.
PO—Cecil, Pa. SP—Gladden, Pa. CTY—Washington. RR—P. C. C. & St. L.
MS—Dan Davis.....Cecil, Pa.
S of H—Elec. loco.
S of M—Elec. mach.
PP—4 return tubular boilers, total 600 H. P., gen. units, 500 volts D. C. and 2 pumps.
EMP—302. Last fiscal year output 116,184 tons.

Lick Run Mine, Slope, Pgh. Seam.
PO—Broughton, Pa. SP—Bruceton, Pa. CTY—Allegheny, Pa. RR—B. & O.
MS—Jas. Porter, ... Broughton, Pa.
S of H—1 elec. loco.
S of M—13 elec. mach.
PP—4 return tubular boilers, total 600 H. P., gen. units, 500 volts D. C. and 2 pumps.
EMP—430. Last fiscal year output 301,576 tons.

Manown Mine, Drift, Pgh. Seam.
PO—Gallatin, Pa. SP—Manown, Pa. CTY—Allegheny. RR—P. & L. E.
MS—F. J. Counihan.....Gallatin, Pa.
S of H—1 elec. loco.
S of M—9 elec. mach.
PP—6 boilers, total 640 H. P., gen. units, 500 volts D. C. and 1 pump.
EMP—310. Last fiscal year output 234,719 tons.

Mansfield Mine, Drift, Pittsburgh Seam.
PO—Loupurex, Pa. SP—Carnegie, Pa. CTY—Allegheny. RR—P. C. C. & St. L.
MS—Emil Gerry .....Loupurex, Pa.
S of H—5 elec. loco.
S of M—17 elec. mach.
PP—Central plant, gen. units, 500 volts D. C.
EMP—693. Last fiscal year output 457,691 tons.

Margerum Mine, Drift, Pittsburgh Seam.
PO—Imperial, Pa. SP—Same. CTY—Allegheny. RR—Montour.
MS—Howard Burns.....Imperial, Pa.
S of H—2 elec. locos.
S of M—10 elec. mach
PP—Central plant and 7 pumps.
EMP—385. Last fiscal year output 293,130 tons.

Midland No. 1 Mine, Drift, Pgh. Seam.
PO—Houston, Pa. SP—Palanka, Pa. CTY—Washington. RR—P. C. C. & St. L.
MS—W. A. Lockhart ....Houston, Pa.
S of H—Elec. loco.
S of M—15 elec. mach.
PP—Power purchased and obtained from central plant, gen. units, 500 volts D. C. and 15 pumps.
EMP—471. Last fiscal year output 223,627 tons.

Midland No. 3 Mine, Drift, Pgh. Seam.
PO—Houston, Pa. SP—Westland, Pa. CTY—Washington. RR—P. C. C. & St. L.
MS—W. A. Lockhart ....Houston, Pa.
S of H—2 elec. loco.
S of M—10 elec. mach.
PP—Power purchased and obtained from central plant, gen. units, 500 volts D. C.
EMP—325. Last fiscal year output 144,307 tons.

Montour No. 1 Mine, Shaft, Pgh. Seam.
PO—McDonald, Pa. SP—South View, Pa. CTY—Washington. RR—Montour.
MS—Thos. Kagle.....McDonald, Pa.
S of H—Elec. loco.

NOTE—Getting in shape to operate.

Montour No. 2 Mine, Shaft, Pgh. Seam.
PO—Cecil, Pa. SP—Cowden, Pa. CTY—Washington. RR—Montour.
MS—Harry Hess.....Cecil, Pa.
S of H—Elec. loco.
PP—Power purchased.
NOTE—Getting in shape to operate.

Montour No. 4 Mine, Shaft.
PO—Lawrence, Pa. SP—Hyland, Pa. CTY—Washington. RR—Montour.
MS—James J. Kerr.....Lawrence, Pa
S of H—Elec. loco.
PP—Power purchased.

Moon Run Mine.
PO—Moon Run, Pa. SP—Same. CTY—Allegheny. RR—Pgh. & Moon Run.
MS—Samuel Pritchard..Moon Run, Pa.
S of H—7 elec. loco.
PP—7 return tubular boilers, total 1,050 H. P., and 7 pumps.
EMP—975. Last fiscal year output 796,794 tons.

Nottingham Mine.
PO—Finleyville, Pa. SP—Hackett, Pa. CTY—Washington. RR—B. & O.
MS—Wm. Carter, ... Finleyville, Pa.
S of H—1 elec. and 1 steam loco.
S of M—10 elec. mach.
PP—3 return tubular boilers, total 450 H. P. and 7 pumps.
EMP—345. Last fiscal year output 93,727 tons.

Ocean No. 2 Mine, Drift, Pgh. Seam.
PO—Scott Haven, Pa. SP—Same. CTY—Westmoreland. RR—P. & L. E.
MS—Edw. Ryan .....Scott Haven, Pa.
S of H—Elec. locos.
S of M—12 elec. mach.
PP—Central plant, gen. units, 500 volts D. C. and 7 pumps.
EMP—544. Last fiscal year output 443,999 tons.

Ocean No. 5 Mine, Drift, Pgh. Seam.
PO—Smithdale, Pa. SP—Same. CTY—Allegheny. RR—P. & L. E.
MS—Carl Fetkenhaur....Smithdale, Pa.
S of H—2 elec. loco.
S of M—10 elec. mach.
PP—Central plant, gen. units, 500 volts D. C. and 2 pumps.
EMP—455. Last fiscal year output 381,385 tons.

Partridge Mine, Drift, Pgh. Seam.
PO—Imperial, Pa. SP—North Star, Pa. CTY—Allegheny. RR—Montour.
MS—Howard Burns.....Imperial, Pa.
S of H—4 elec. loco.
S of M—29 elec. mach.
PP—7 return tubular boilers, total 950 H. P., gen. units, 500 volts D. C. and 10 pumps.
EMP—591. Last fiscal year output 395,204 tons.

Shaner Mine, Drift, Pgh. Seam.
PO—Yohogany, Pa. SP—Guffey, Pa. CTY—Westmoreland. RR—B. & O.
MS—Alex McClymont...Yohoghany, Pa.
S of H—2 elec. loco.
S of M—Elec. mach.
PP—4 return tubular boilers, total 600 H. P., gen. units, 500 volts D. C. and 3 pumps.
EMP—319. Last fiscal year output 222,649 tons.

Somers Nos. 2 and 4 Mines, Pgh. Seam.
PO—Pricedale, Pa. SP—Bellevernon, Pa. CTY—Westmoreland. RR—P. & L. E.
MS—Thos. Easton.....Pricedale, Pa.
S of H—4 elec. loco.
S of M—13 elec. mach.
PP—Central plant, gen. units, 500 volts D. C. and 10 pumps.
EMP—507. Last fiscal year output 417,037 tons.

Shaw Mine; Drift; Pgh. seam.
PO—Midway, Pa.; SP—Same; CTY—Washington. RR—P. C. C. & St. L.
MS—Wm. Garrett.....Midway, Pa.
S of H—Elec. loco.
S of M—Elec. mach.
PP—Power purchased, gen. units, 500 volts D. C.
EMP—325. Last fiscal year output 118,233 tons.

Waverly Mine; Shaft; Pgh. Seam.
PO—Smithton, Pa.; SP—Same; CTY—Westmoreland; RR—B. & O.
MS—Samuel McKay.....Smithton, Pa.
S of H—Elec. loco.
S of M—7 Elec. mach.
PP—Power purchased; gen units 500 volts D. C. and 3 pumps.
EMP—270. Last fiscal year output 162,346 tons.

West Newton Mine, Shaft. Pgh. Seam.
PO—West Newton, Pa.; SP—Same; CTY—Westmoreland; RR—P. & L. E.
MS—John Houser....West Newton, Pa.
S of H—1 Elec. loco.
S of M—9 Elec. mach.
PP—Power purchased, gen. units 500 volts D. C. and 5 pumps.
EMP—320. Last fiscal year output 190,235 tons.

Wickhaven Mine; Shaft; Pgh. Seam.
PO—Whitsett, Pa.; SP—Wick Haven, Pa.; CTY—Fayette; RR—P. & L. E.
S of H—2 Elec. loco.
S of M—8 Elec. mach.
PP—Central plant, gen. units 500 volts D. C.
EMP—381. Last fiscal year output 200,886 tons.

Yough Slope Mine; Slope; Pgh. Seam.
PO—West Newton, Pa.; SP—Same; CTY—Westmoreland; RR—B. & O.
MS—John Houser....West Newton, Pa.
S of H—1 Elec. loco.
S of M—7 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., gen. units 500 volts D. C. and 4 pumps.
EMP—263. Last fiscal year output 155,897 tons.

PITTSBURGH & EASTERN COAL CO.
General Office, Leader News Bldg., Cleveland, O.
Mines Nos. 1, 2, and 3, Shaft; "Pittsburgh" or "Panhandle" Seam, 5 ft. thick.
PO—Chery Valley, Pa. SP—Same CTY—Washington. RR—P. C. C. & St. L.
PR—D. R. Hanna,.. ..Cleveland, O
TR—M. A. Hanna, " "
GM—Michael Gallagher, " "
PA—T. F. Cadden, " "
MS—Robt. McKinney, Cherry Valley, Pa.
S of H—Mules and 5 Electric Locomotives. Track gauge 36 in.
S of M—35 Elec. Mach.
PP—17 Return tubular boilers.
EMP—900. Last fiscal year output 591,000 tons.

PITTSBURGH & ERIE COAL CO
General Office, Erie, Pa.
GS—T. F. Whalen,... Pittsburgh, Pa.
PA—T. F. Whalen, Pittsburgh, Pa.
SCO—Erie Supply Co. Buyer, T. F. Whalen.

Sumner No. 2, Slope, Pittsburgh Thick vein, 6 to 9 ft. thick.
PO—Braznell, Pa.; SP—Same, CTY—Fayette. RR—P.V. & C., Redstone Branch.
MS—James Henderson, Braznell Pa.
SM—L. S. Barbour, Braznell, Pa.
S of H—Rope, Mules and 3 Elec. loco. Track gauge 42 inch.
S of M—Hand, and 7 Elec. machines.
PP—3 Erie City, and 1 Union Iron Works return tubular boilers, total 650 H.P 2 Gen. units, 250 volts, D. C., 2 pumps.
EMP—330 Last fiscal year's output 366,296 tons.

Erie No. 1, Drift, Pittsburgh Thick vein, 4 to 6 ft. thick.
PO—Burgettstown, Pa.; SP— Same; CTY—Washington. RR—P. C. C. & St.L., Burgettstown Branch.
MS—Harry Calloway,..Burgettstown, Pa.
S of H—Rope, and 6 Elec. loco., track gauge 42 in.
S of M—Hand, and 13 Elec. machines.
PP—3 Union Iron Works return tubular boilers, total 500 H.P. 2 Gen. units, 250 volts D.C. 2 pumps.
EMP—239. Last fiscal year's output 222,896 tons.

PITTSBURGH GAS COAL CO.
General Office, Punxsutawney, Pa.
Iselin Nos. 1, 2, 3, 4 and Fritz No. 2 Mines; Drift; Pgh. Seam, 44 to 66 in. thick.
PO—Iselin, Pa.; SP—Same; CTY—Indiana; RR—B. R. & P.
PR—L. W. Robinson, Punxsutawney, Pa.
TR—F. G. St. Clair....Du Bois, Pa.
GM—F. M. Fritchman..Indiana, Pa.
CE—Geo. W. Brymer, " "
PA—H. C. Smith, Punxsutawney, Pa.
EE—L. W. Householder, " "
MS—W. R. Wardrop.....Iselin, Pa.
SCO—Ridge Supply Co., Mgr. J. F. Campbell, Iselin, Pa.
S of H—25 elec. loco.
S of M—Elec. and comp. air mach.
PP—27 Boilers, total 15,630 H. P.
EMP—1526.

PITTSBURGH PLATE GLASS CO. (Coal Dept.)
General Office, Pittsburgh, Pa.
Creighton Coal Works, Drift; Freeport Seam, 84 to 48 in. thick.
PO—Creighton, Pa. SP—Same. CTY—Allegheny; RR—P.R.R., Conemaugh Div.
PR—W. L. Clause, Pittsburgh, Pa.
TR—Edward Pitcairn, Pittsburgh, Pa.
PA—J. F. Cargill, Pittsburgh, Pa.
CE—J. H. Fox, Pittsburgh, Pa.
EM—V. L. Henry, Creighton, Pa.
MS—Chas. E. Craig, Creighton, Pa.
S of H—9 Elec. loco.; track gauge 42 in.
S of M—9 Elec. mach.
PP—3 Return tubular boilers, total 250 H. P., 2 gen. units 250 volts D. C., 6 pumps; also purchase power.
EMP—243. Last fiscal year output 252,165 tons. Sales Agent, Edward Pitcairn, Pittsburgh, Pa.

PITTSBURGH & SOUTHWESTERN COAL CO.
General Office, Greensburg, Pa.
Donahoe Mine, Slope, Pittsburgh Seam 48 to 72 in. thick.
PO—Avella, Pa. SP—Same. CTY—Washington. RR—Wabash Pittsburgh Terminal.
PR—Thos. Donohoe, Oliver Bld'g., Pgh., Pa.
TR—John B. Steel, Greensburg, Pa.
GM—A. M. Gardner, Avella, Pa.
PA—A. M. Gardner, " "
MS—A. M. Gardner, " "
EM—Harrop Hopkins & Taylor, Pgh. Pa.
MM—Blaine Hodge.....Avella, Pa.
S of H—Rope and mules; track gauge 40 in.
S of M—16 Comp. Air Machines.
PP—2 Erie Return Tubular Boilers, total 300 H.P. 1 Air Comp. and 1 pump.
EMP—125. Last fiscal year output 120,000 tons. Sales Agent, Thos. Donohoe, Pgh., Pa.

PITTSBURGH TERMINAL RAILROAD & COAL CO.
General Office, Wabash Bldg., Pittsburgh, Pa.
PR—W. W. Keefer, ..Pittsburgh, Pa.
GM—W. W. Keefer, " "
GS—W. W. Keefer, " "
TR—N. T. Davy, " "
PA—H. W. Nethken, " "
EM—Dwight Gerber, " "
EE—Wm. Singleton, " "
MM—William Singleton, " "
SCO—Mutual Supply Co., Buyer H. W. Nethken, Pittsburgh, Pa. Sales Agency, B. Nicoll & Co., New York, N. Y.

Nos. 1 and 2 Mines: Shaft; Pgh. Seam, 62 to 68 in. thick.
PO—Castle Shannon, Pa. SP—Same. CTY—Allegheny. RR—West Side Belt.
MS—John Mahony, Castle Shannon, Pa.
S of H—5 Elec. loco. and mules. Track gauge 44 in.
S of M—19 Elec. mach. and hand.
PP—6 pumps, power from Central plant at No. 4 mine.
EMP—(1) 680; (2) idle. Last fiscal year output 549,809 tons.

No. 3 Mine; Shaft; Pgh. Seam 62-68 in. thick.
PO—Mollenauer, Pa. SP—Benicoll, Pa. CTY—Allegheny. RR—West Side Belt.
MS—John Mahony, Castle Shannon, Pa.
S of H—9 Elec. loco and mules; Track gauge 44 in.
S of M—19 Elec. mach. and hand.
PP—3 pumps, Power from Central Plant at No. 4 Mine.
EMP—739. Last fiscal year output 568,218 tons.

No. 4 Mine, Shaft; Pgh. Seam, 64-72 in. thick.
PO—Horning, Pa. SP—Same. CTY—Allegheny. RR—West Side Belt.
MS—George T. Akins, ..Horning, Pa.
S of H—5 Elec. loco. and mules. Track gauge 44 in.
S of M—12 Elec. mach. and hand.
PP—4 Babcock & Wilcox water tube boilers, total 2408 H. P., 2 gen. units 2300 volts A. C., 3 phase, 60 cycles, 1 compressor, and 3 pumps. Central plant furnishes power to Mines 2, 3, 4, 6 and 7.
EMP—580. Last fiscal year output 286,311 tons.

No. 5 Mine; Pgh. Seam, 64-72 in. thick.
PO—Horning, Pa.; SP—Same; CTY—Allegheny; RR—West Side Belt.
MS—George T. Atkins....Horning, Pa.
Track gauge 44 in. Idle March, 1914.

No. 6 Mine; Drift; Pgh. Seam; 62-64 in. thick.
PO—Bruceton, Pa.; SP—Same; CTY—Alegheny; RR—West Side Belt.
MS—George T. Atkins....Horning, Pa.
S of H—6 Elec. loco. and mules; track gauge 44 in.
S of M—18 Elec. mach. and hand.
PP—2 Pumps. Power from Central plant at Mine No. 4.
EMP—688. Last fiscal year output 560,230 tons.

Continued on Next Page.

No. 7 Mine; Drift; Pgh. Seam, 62-71 in. thick.
PO—Large, Pa.; SP—Same; CTY—Allegheny; RR—West Side Belt.
MS—John North.....Large, Pa.
S of H—14 Elec. loco. and mules; track gauge 44 in.
S of M—18 Elec. mach. and hand.
PP—5 Pumps. Power from Central plant at No. 4 Mine.
EMP—687. Last fiscal year output 388,712 tons.

PITTSBURGH-WESTMORELAND COAL CO.
General Office, Fulton Bldg., Pittsburgh, Pa.
PR—H. A. Kuhn.....Pittsburgh, Pa.
CE—H. A. Kuhn, " "
TR—H. A. Andrews, " "
GM—H. K. Knopf, " "
PA—H. K. Knopf, " "
EM—H. K. Knopf, " "
MM—H. K. Knopf, " "
SCO—Miners Supply Co., buyer W. S. McElhose, Pittsburgh, Pa.
Sales Agents, H. A. Andrews and T. S. Baillie, Pittsburgh, Pa.

Hazel Kirk Nos. 1 and 3; Shaft and Slope; Pgh. Seam, 6 ft. thick.
PO—Ivanhoe, Pa.; SP—Hazel Kirk, Pa.; CTY—Washington; RR—P. V. & C., Ellsworth Br.
MS—Wm. Bird..Monongahela City, Pa.
SM—John Evans.....Scottdale, Pa.
S of H—3 elec. loco. and mules. Track gauge 42 in.
S of M—13 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units and 4 pumps.
EMP—239. Last fiscal year output 192,558 tons.

Hazel Kirk No. 2 Mine; Shaft; Pgh. Seam, 6 ft. thick.
PO—Van Voorhis, Pa.; SP—Same; CTY—Washington; RR—P. V. & C. Ellsworth Branch.
SM—O. Willey.....Van Voorhis, Pa.
S of H—3 Elec. loco. and mules; track gauge 42 in.
S of M—9 Elec. mach.
PP—3 Return tubular boiler, total 450 H. P., 2 gen. units and 2 pumps.
EMP—355. Last fiscal year output 277,103 tons.

Penn Manor No. 1 Mine; Shaft; Pgh. Seam; 6 ft. thick.
PO—Manor, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R. Main Line.
MS—Jas.G.Ferguson, Harrison City, Pa.
S of H—Rope and mules. Track gauge 39 in.
S of M—6 Elec. mach.
PP—4 Return tubular and 4 cyndrical boilers, total 710 H. P. and 3 pumps.
EMP—304. Last fiscal year output 271,825 tons.

Penn Manor No. 5 Mine; Slope; Pgh. Seam, 6 ft. thick.
PO—Claridge, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—W. H. Dewalt..Harrison City, Pa.
S of H—Rope and mules.
S of M—7 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units and 3 pumps.
EMP—194. Last fiscal year output 162,348 tons.

Shoenberger Mine; Drift; Pgh. Seam 6 ft. thick.
PO—Baird, Pa.; SP—Same; CTY—Washington; RR—P. R. R., Monongahela Div.
MS—Wm. S. Lewis, Monon. City, Pa.
SM—John Bell, " "
S of H—5 Elec. loco.; track gauge 42 in.
S of M—14 Elec. machines.
PP—9 return tubular boilers, total 1150 H. P., 6 units and 2 pumps.
EMP—285. Last fiscal year output 282,762 tons.

Acme No. 2; Slope; Pgh. Seam, 6 ft. thick.
PO—Bentleyville, Pa. SP—Same. CTY—Washington; RR—P. V. & C., Ellsworth Branch.
MS—J. E. Hackett..Bentleyville, Pa.
SM—J. A. Kensinger, " "
S of H—Elec. loco., mules and rope; track gauge 44 in.
S of M—Elec. mach.
PP—6 Return tubular boilers, total 900 H. P., 8 gen. units and 3 pumps.
EMP—462. Coke ovens 300 Rectangular. Last fiscal year output 335,821 tons.

Preston Mine; Drift; Clarion Seam.
PO—W. Monterey, Pa.; SP—Same; CTY—Clarion; RR—P.R.R., Allegheny Valley Div.
MS—W. M. Whitley.W. Monterey, Pa.
S of H—Mules.
S of M—Comp. air mach.
PP—2 Return tubular boilers, total 225 H. P. and 1 pump.
EMP—38. Last fiscal year output 681.

PLUMER COKE CO.
General Office, Uniontown, Pa.
Plumer Mine; Slope; Pittsburgh Seam, 108 to 120 in. thick.
PO—McClellandtown, Pa.; SP—Leckrone, Pa.; CTY—Fayette; RR—Monon.
PR—A. Plumer Austin....Uniontown, Pa.
TR—Richard Austin, " "
PA—Richard Ausin, " "
GM—G. B. Gilmore..Uniontown, Pa.
EM—E. C. Baker Co., " "
MS—E. W. Eberly.McClellandtown, Pa.
S of H—Rope; track gauge 42 in.
S of M—Hand.
PP—Gen. units 220 volts A. C., 2 phase, 60 cycles.
EMP—77. Last fiscal year output 45,100 tons. Coke ovens, 72.

PLYMOUTH COAL MINING CO
General Office, Philadelphia, Pa. ....
Plymouth Mine, Drift Mine, C prime Seam.
PO—Portage, Pa. SP—Same. CTY Cambria. RR—P.R.R.
PR—Roy A. Hatfield, Philadelphia, Pa.
TR—Jos. T. Hilles, Philadelphia, Pa.
GM—A. Bathgate.....Rosebud, Pa.
GS—Thomas M. Forsythe, Portage.
S of H—Mules.
S of M—Hand.
PP—1 Return Tubular Boiler, total 80 H.P..
EMP—200.
Sales Agents, Hatfield & Hilles, Philadelphia, Pa.

POLAND COAL CO.
General Office, House Bldg., Pittsburgh, Pa.
Poland No. 1 Mine; Slope; Pittsburgh Seam, 60 to 108 in. thick.
PO—Pt. Marion, Pa.; SP—Poland, Pa; CTY—Fayette; RR Monongahela.
PR—Julian Kennedy....Pittsburgh, Pa
TR—John O. Miller, " "
GM—R. C. Crawford, " "
PA—G. D. Anderson, " "
MS—John M. Crawford, Point Marion, Pa.
CE—John M. Rayburn, Pittsburgh, Pa.
EM—Julian Kennedy, Jr., " "
MM—Adam Kessler.....Pt. Marion, Pa.
EE—Adam Kessler, " "
SCO—Poland Supply Co., Buyer R. A Campbell, Dunkard, Pa.
S of H—3 elec. loco. Track gauge 42 in.
S of M—3 Elec. mach.
PP—4 Return tubular boilers, total H. P. 500; 2 gen. units, 250 volts D. C., 1 pump.
EMP—97. Last fiscal year output 75,000 tons.
Cake Ovens, 101,
Sales Manager, Geo. Forney, Pittsburgh, Pa.

POLLARD, LEE W. & CO.
Polland Mine; Drift; "D" Seam, 30 to 36 in. thick.
PO—Garrett, Pa.; SP Same; RR—B. & O., Berlin Br.
S of H—Mules.
S of M—Hand.
Will install electric mach.
Successors to Craig Sons Coal Co.

PORTAGE COAL MINING CO.
Portage Nos. 2 and 4 Mines; Slope; Shaft and Drift, Upper Freeport and Lower Kittanning Seams.
PO—Portage, Pa.; SP—Same; CTY—Cambria; RR— P. R. R.
PA—G. E. Metzger.....Portage, Pa.
GS—A. M. Dunsmore, " "
SCO—Portage Supply Co., buyer, Grant Tompkins, Portage, Pa.
S of H—Mules and rope.
S of M—Hand and 31 comp. air mach.
PP—1 Water tube and 6 return tubular boilers, total 1164 H. P., 4 air comp., 5 pumps.

POTTER, BIGLER & POTTER
General Office, Clearfield, Pa.
Horse-Shoe and Mt. Carmel Mines, Drift, "B" Seam, 3½ ft. thick.
PO—Karthaus, Pa. SP—Same. CTY—Clearfield.
GM—A. M. Bigler.
PA—W. B. Potter, Karthaus, Pa.
MS—G. H. Lewis, Karthaus, Pa.
S of H—Mules track gauge 36 in.
S of M—Hand.
EMP—75

POTTS RUN LAND CO
General Office, Clearfield, Pa.
Potts Run Nos. 2 and 3 Mines; Drifts; "B" Seam, 48 to 56 in. thick.
PO—Boardman, Pa.; SP—Same; CTY—Clearfield; RR—N. Y. C. & H. R.
PR—A. B. Kerr, New York City.
TR—F. B. Kerr, Clearfield, Pa.
GM—F. B. Kerr, " "
PA—F. B. Kerr, " "
CE—E. W. Hess, " "
MS—John Boag.....Boardman, Pa.
SCO—Boardman Supply Co. Buyer, John Boag, Jr., Boardman, Pa.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
EMP—225. Last fiscal year output 149,168 tons.

PRESTON COAL CO.
See Pittsburgh-Westmoreland Coal Co.

PRINCESS COAL MINING CO.
Out of business.

PRISCILLA COAL MINING CO.
General Office 922 Lafayette Bldg., Phila., Pa.
Priscilla Mine; Drift; "B" Seam, 40 to 44 in. thick.
PO—South Fork, Pa.; SP—Same; CTY—Cambria. RR—P. R. R.
PR—H. L. Merrick....Philadelphia, Pa.
TR—H. G. Merrick, " "
GM—S. J. Brown, " "
PA—John Reckman....South Fork, Pa.
MS—John Reckman, " "
EM—E. W. Hess, " "
S of H—Rope and mules.
S of M—Hand.
PP—Purchase power.
EMP—45. Last fiscal year output 37,500 tons.
Sales Agency, Geo. W. Bailey Co.

PROSPECT COAL & COKE CO
Solon Mine, Slope, Pgh. Seam, 7 to 8½ ft. thick.
PO—R.F.D. No. 4, Uniontown, Pa. CTY—Fayette; RR—Monon. R. R. R.
PR—W. A. Stone, Uniontown, Pa.
GM—W. A. Stone, " "
TR—Geo. H. Bortz, " "
PA—Geo. H. Bortz, " "
GS—J. F. Dawson, New Salem, Pa.
MS—J. F. Dawson, " "
CE—Fayette Eng. Co., Uniontown, Pa.
EM—Fayette Eng. Co., Uniontown, Pa.
MM—L. Holmes, R.F.D. 4, Uniontown, Pa.
SCO—Prospect Supply Co., Uniontown, Pa., Buyer, S. D. Adams.
S of H—Rope; Track gauge, Standard.
S of M—Hand and 1 comp. air machine.
PP—2 Return Tubular Boilers, total 200 H. P., one compressor, 3 pumps. Coke ovens—100 Bee Hive.
Last fiscal year output 23,122 tons.
Sales Agent, W. A. Stone & Co., Uniontown, Pa.

PROVIDENT COKE & MINING CO
Provident No. 1 Mine, Drift, Freeport Seam, 3½ to 5 ft. thick.
PO—Kelly Station, Pa. SP—Same. CTY—Armstrong; RR—B. & O. R.R.
PR—D. G. Bamford, Midway, Pa.
TR—H. J. Lindeman, Kittanning, Pa.
S of H—1 elec. loco., track gauge 42 in.
S of M—3 elec. mining machines.
PP—Buy power.

PRYOR COAL CO
General Office, Greensburg, Pa.
Avella No. 1, Drift, Pittsburgh Seam No. 6, 4 ft. 8 in. thick.
PO—Avella, Pa. SP—Same. CITY—Washington; RR— W. P. T. Ry.
PR—C. M. Jamison, Greensburg, Pa.
TR—John S. Sell, " "
GM—W. R. Turney, " "
PA—W. R. Turney, " "
CE—W. R. Turney, " "
MS—J. E. Ranft, Avella, Pa.
S of H—Mules and 2 elec. locos. track gauge 42 in.
S of M—6 Elec. chain machines.
PP—2 Erie City return tubular boilers, total 300 H.P., 250 volts, D.C.
EMP—130. Last fiscal year output, 125,000 tons. Sales Agents, Moreland Coke Co., Pittsburgh, Pa.

PUNXSUTAWNEY COAL MINING CO
General Office, 714 Marine National Bank Bldg., Buffalo, N. Y.
Frances Mine, Drift, Freeport Seam, 3 to 5 ft. thick.
PO—Rossiter, Pa. SP—Frances, Pa.; CTY—Indiana; RR—B. R. & P.
PR—Harry Yates.....Buffalo, N. Y.
TR—W. S. Blaisdell, Punxsutawney, Pa.
GM—W. S. Blaisdell, Punxsutawney, Pa.
PA—W. S. Blaisdell, Punxsutawney, Pa.
MS—C. J. Weber.....Rossiter, Pa.
SCO—Frances Supply Co. Buyer, I. B. Williams, Punxsutawney, Pa.
S of H—Mules; track gauge.
S of M—Hand, 20 Comp. air, and 3 Elec. mach.
PP—4 Water Tube Boilers, total 500 H.P.
EMP—250.

PURITAN COKE CO
General Office, Uniontown, Pa.
Puritan Mine, Slope, Pittsburgh Seam, 7 to 9 ft. thick.
PO—McClellandtown, Pa.; SP—Leckrone, Pa. CTY—Fayette. RR—Monongahela Div. P. R. R.
PR—James R. Gray.....Uniontown, Pa.
TR—G. S. Horah, Uniontown, Pa.
PA—F. R. Crow, McClellandtown, Pa.
MS—F. R. Crow, McClellandtown, Pa.
EM—South Penn. Eng. Co., Uniontown, Pa.
MM—John Wright, McClellandtown, Pa.
EE—John Wright, McClellandtown, Pa.
SCO—Puritan Supply Co. Buyer, Guy Worman, McClellandtown, Pa.
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—4 Titusville return tubular boilers, total 600 H.P. 1 pump. Buy electricity.
EMP—120. Coke ovens, 202 Bee Hive. Last fiscal year output 120,000 tons.
Sales Agent, W. W. Parshall and G. S. Horah, Uniontown, Pa.

QUEENSTOWN COAL CO.
Drift Mine; L. Kittanning Seam, 3 to 4 ft. thick.
PO—East Brady, Pa.; SP—Dewey, Pa.; CTY—Armstrong; RR—W. A.
PR—J. C. Frazer, East Brady, Pa.
TR—Wm. Frazer, " " "
GM—Wm. Frazer, " " "
PA—Wm. Frazer, " " "
S of H—Mules; track gauge 36 in

PYRAMID COAL MINING CO.
PO—Curwensville, Pa.; CTY—Clearfield; RR—N. Y. C.
PR—J. B. Novis.....Curwensville, Pa.
GM—Fred Pilkerton, " "
MS—Michael Kelley, " "
Daily output 325 tons.

QUEMAHONING COAL CO.
General Office, Somerset, Pa.
PR—D. B. Zimmerman..Somerset, Pa.
GM—D. B. Zimmerman, " "
TR—W. Kooser, " "
GS—R. S. Zimmerman, " "
PA—H. H. Hodge, " "
CE—George Morris.....Ralphton, Pa.
MM—Jos. McNally, " "
SCO—A. W. Zimmerman & Co., buyer A. W. Zimmerman, Ralphton, Pa.

Ralphton Nos. 1 and 3; Slope and Drift; C Prime, 3½ to 4½ ft. thick.
PO—Ralphton, Pa.; SP—Boswell, Pa.; CTY—Somerset; RR—B. & O., Boswell Branch.
MS—R. S. Zimmerman..Ralphton, Pa.
S of H—7 Elec. loco.; track gauge 42 in.
S of M—1 Elec. mach.
PP—4 Water tube boilers, gen. unit D. C., 4 pumps.
EMP—243. Last fiscal year output 270,304 tons.

Zimmerman Nos. 4 and 5 Mines; Drift and Shaft; C Prime Seam, 3½ to 4 ft. thick.
PO—Ralphton, Pa.; SP — Same; CTY—Somerset; RR—B. & O., Boswell Branch.
MS—R. S. Zimmerman..Ralphton, Pa.
S of H—5 Elec. loco.; track gauge 42 in.
S of M—3 elec., 14 comp. air mach. and hand.
PP—2 Erie City water tube boilers, 1 gen. unit D. C., 1 comp., 4 pump.
EMP—326. Last fiscal year output 180,810 tons.

Zimmerman No. 6; Shaft; 3 to 4 ft.
PO—Somerset, Pa.; SP—Husband, Pa.; CTY—Somerset; RR—B. & O., Boswell Branch.
MS—J. F. Somerville, Somerset, Pa.
S of H—Mules; track gauge 42 in.
S of M—12 comp. air mach.
PP—4 Erie City return tubular boilers, 1 comp., 1 pump.
EMP—79. Last fiscal year output 50,724 tons.

Zimmerman No. 7 Mine; Drift; 3 to 4 ft. thick.
PO—Ralphton, Pa.; SP — Same; CTY—Somerset; RR—B. & O., Boswell Branch.
MS—R. S. Zimmerman..Ralphton, Pa.
S of H—1 elec. loco. Track gauge 42 in.

Continued on Next Page.

QUEMAHONING COAL CO.—Continued.
S of M—1 elec. mach.
PP—Power from No. 5 Mine.
EMP—31. Last fiscal year output 13,782 tons.

QUEMAHONING CREEK COAL CO.
Quemahoning Creek No. 1 Mine; Slope; C. Prime Seam.
PO—R.F.D. No. 6, Somerset, Pa.; SP—Harrison; CTY—Somerset; RR—B. & O., Quemahoning Br.
PR—Chas. J. Harrison..Somerset, Pa.
TR—Chas. J. Harrison, Jr., " "
GM—J. C. Brydon, " "
SCO—Harrison Merc. Co., buyer A. Ward, Cofforth, Somerset, Pa.
MS—S. C. Halverson, " "
S of H—1 Gasoline loco.
S of M—Hand.
PP—1 Erie City water tube boiler, 5 pumps.
EMP—75. Last fiscal year output 62,052 tons.
Quemahoning Creek No. 2 Mine, 80 per cent. completed. April 22, 1914.

RAINEY, W. J.
General Office, Uniontown, Pa.
GM—Scott Stewart, 527 Fifth Ave., New York, N.Y.
GS—L. L. Williard.....Uniontown, Pa.
PA—M. J. Farrell, " "
EE—E. P. Rauscher, " "
MM—Wm. Young, " "
Chief Eng—J. H. Dunn, " "
SM—J. W. Risdon, " "

Revere Mine; Slope; Conn. Seam.
PO—Uledi, Pa.; SP—Revere Works, Pa.; CTY—Fayette; RR—P. R. R.
MS—C. Patterson .....Uledi, Pa.
SM—J. M. Snyder, " "
S of M—10 Comp. air mach.
PP—8 boilers, total 1,200 H.P., 2 gen. units, 1 comp., 4 pumps, 550 coke ovens.

Allison Nos. 1 and 2 Mines; Shafts, Conn. Seam.
PO—Allison, Pa.; SP—Allison Works, Pa.; CTY—Fayette; RR—P.R.R., Monon. Div.
MS—Ben Holliday .....Allison, Pa.
SM—E. O. Smith, " "
S of M—4 Comp. air mach.
PP—5 Boilers total 1500 H. P., 2 gen. units, 1 comp., 1 pump., 300 coke ovens.

Grace; Slope; Conn. Seam.
PO—Connellsville, Pa.; SP—Moyer, Pa. CTY—Fayette; RR—P. R. R.
MS—E. B. Martin.....Connellsville, Pa.
SM—S. L. Walker, " "
PP—3 Boilers, total 350 H. P., 1 comp., 1 pump; Coke ovens, 124.

Elm Grove Mine; Slope. Conn. Seam.
PO—Dunbar, Pa.; SP—Elm Siding, Pa.; CTY—Fayette; RR—B. & O.
MS—J. W. Bingham.....Dunbar, Pa.
SM—George B. Stillwagon, " "
PP—7 Boilers, total 1490 H.P., 3 comp., 2 pumps; coke ovens 200.

Acme Mine; Shaft.
PO—Mt. Pleasant, Pa.; SP—Acme Works, Pa.; CTY—Westmoreland; RR—P. R. R.
MS—A. A. Mitchell, Mt. Pleasant, Pa.
SM—J. C. Smiley, " "
PP—3 Boilers, total 450 H. P., 2 gen. units, 2 comp., 2 pumps; coke ovens, 200.

Royal Mine; Shaft; Conn. Seam.
PO—Chestnut Ridge, Pa.; SP—Royal Works, Pa.; CTY—Fayette; RR—P. R. R.
MS—I. T. Mulle..Crestnut Ridge, Pa.
SM—O. H. Roderick, " "
S of M—12 Comp. air mach.
PP—5 Boilers total 1560 H. P., 3 gen. units, 2 comp., 2 pumps, coke ovens 382.

Mount Braddock Mine; Slope; Conn. Seam.
PO—Mt Braddock, Pa.; SP—Same and Gist, Pa.; CTY—Fayette; RR—B. & O., P. R. R.
MS—W. E. Mathews, Mt. Braddock, Pa.
SM—D. E. Foltz, " "
S of H—1 Steam loco.
PP—3 Boilers, total 1350 H. P., 3 gen. units, 4 comp., 4 pumps; coke ovens, 360.

Paul and Fort Hill Mines; Slope and Drift; Conn. Seam.
PO—Vanderbilt, Pa.; SP—(P) Dickerson Run, (FH) Dawson, Pa.; CTY—Fayette; RR—P.& L.E., B. & O.
MS—J. B. Henderson..Vanderbilt, Pa.
SM—S. G. McBurney, " "
PP—14 Boilers, total 11600 H. P., 1 gen. unit, 2 comp., 7 pumps, coke ovens, 395.

Union Mine; Drift; Conn. Seam.
PO—Alverton, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R.
MS—A. A. Mitchell..Mt. Pleasant, Pa.
PP—Boiler 50 H. P., 1 comp., 1 pump; coke ovens 50.

RALSTON COAL CO
Red Run Mine, Drift; "E" and "B" Seams; 18 to 30 in. thick.
PO—Redburn, Pa.; SP—Ralston, Pa.; CTY—Lycoming; RR—P. R. R.,N. C. Div.
PR—E. M. McCrocken.....Ralston, Pa.
TR—J. J. Hollren.....Ralston, Pa.
GM—H. W. Jones, " "
GS—D. B. Allison, " "
PA—D. B. Allison, " "
EM—D. B. Allison, " "
MM—J. E. Schnars.....Redburn, Pa.
MS—James Brownlee, " "
SCO—Redburn Store Co., Buyer. R. S. Irving, Redburn, Pa.
S of H—3 Elec. loco., track gauge 36 in.
S of M—Hand.
PP—2 Keeler and 2 Penna. water tube boilers, 2 gen. units, 250 volts, D. C.
EMP—65. Last fiscal year output 35,000 tons.
Sales Agent, D. B. Allison, Ralston, Pa.

RALPHTON COAL CO.
See Quemahoning Coal Co.

RAMEY COAL CO
Ramey Mine No. 1. Drift Mine, B. Seam, 4½ ft. thick.
PO—Ramey, Pa. SP—Same. CTY—Clearfield. RR—P. S. & N.
PR—F. F. Kramp, Ramey, Pa.
TR—E. C. Davis, " "
GM—F. F. Kramp, " "
GS—F. F. Kramp, " "
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
EMP—55. Last fisal year output, 10,500 tons.

RAMSEY COAL CO., INC.
Ramsey Mine, drift, Pgh. Connellsville Seam, 6 to 8 ft. thick.
PO—Ligonier, Pa. SP—Wilpen, Pa. CTY—Westmoreland. RR — Ligonier Valley.
PR—E. C. Ramsey, Ligonfer, Pa.
GM—S. S. Brownfield, " "
PA—S. S. Brownfield, " "
GS—S. S. Brownfield " "
TR—H. D. Lohr, " "
MS—Geo. E. Alexander, Wilpen, Pa.
EM—S. S. Brownfield, Ligonier, Pa.
S of H—Mules, rope and gravity. Track gauge 43 in.
S of M—Hand.
PP—1 Gasoline Engine driving fan.
EMP—45. Last fiscal year output, 67,896 tons.

RANDOLPH COAL CO.
General Office, Meyersdale, Pa.
Randolph Mine, drift. C Prime Seam 40 to 48 in thick.
PO—Hooversville, Pa. SP—Boswell, Pa. CTY—Somerset. RR—B. & O. Quemahoning Br.
PR—R. E. Beerits.....Somerset, Pa.
TR—W. H. Stotler, Meyersdale, Pa.
GM—W. H. Stotler, " "
PA—W. H. Stotler, " "
GS—W. H. Stotler.....Meyersdale, Pa.
MS—Geo. Waddell, Hooversville, Pa.
EM—J. J. Hoblitzell, Jr., Meyersdale, Pa.
MM—J. W. Ray.....Hooversville, Pa.
SCO—Edgar Stotler, Hooversville, Pa.
S of H—Mules, Track gauge 36 in.
S of M—Hand and 1 Elec. mach.
PP—1 Return Tubular Boiler. total 100 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—140. Last fiscal year output, 82,150 tons.

RARIDAN & EAST BRADY COAL CO.
Raridan Mine, Drift; Freeport Seam; 42 in. thick.
PO—Logansport, Pa.; SP—Glenn, Pa.; CTY—Armstrong; RR—P. R. R., B. A. V. Div.
PR—J. C. Gray, Frick Bldg., Pgh., Pa.
TR—J. H. Thompson, " "
GM—J. H. Thompson, " "
GS—J. H. Thompson, " "
PA—J. H. Thompson, " "
CE—Albert Smith.....Saltsburg, Pa.
EM—Albert Smith, " "
MS—H. J. Christy.....Logansport, Pa.
S of H—1 Elec. loco.; track gauge 40 in.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, gen. units 250 volts, 1 compressor, 1 pump.
EMP—57. Last fiscal year output 35,000 tons.

RAY COAL CO.
Out of business.

READING IRON CO
General Office, Reading, Pa.
Reading Mines Nos. 3 and 4; Drifts. No. 3 C. No. 4 E Seams, 36 to 42 in. thick.
PO—Kimmelton, Pa.; SP—Stoyestown, Pa. CTY—Somerset. RR—B. & O. S. & C. Br.
PR—F. C. Surink.....Reading, Pa.
TR—F. Butler Reading, Pa.
GM—Geo. Schuhmann, " "
GS—Geo. J. Krebs, Kimmelton, Pa.
PA—Geo. J. Krebs, " "
EM—Geo. Hunt, " "
MM—Ivan Gillespie, " "
S of H—5 Elec. loco., track gauge 36 in.
S of M—21 elec. mach.
PP—2 B & W Water tube boilers, total 800 H.P., 2 gen. units 250 volts D.C, 1 compressor and 2 pumps.
EMP—200. Last fiscal year output, 152,783 tons. Sales Agent, G. F. D. Hallman, Reading, Pa.

REAM, J. O.
Ream Nos. 1 and 2 Mines, Drift, Price Seam, 24 to 48 in. thick.
PO—Berlin, Pa. SP—Same. CTY—Somerset. RR—B & O., Berlin Br.
GM—John O. Ream.....Berlin, Pa.
GS—John Ream, " "
EM—Stuart Pritz, " "
S of H—Mules.
S of M—Hand.
PP—1 Pump; power purchased.
EMP—24. Last fiscal year output 17,200 tons.
Successors to the Grace Coal Co.

RED BANK COAL CO.
Red Bank Mine, Drift, "A" Seam 3 to 6 ft. thick.
PO—Phillipsburg, Pa.; SP—Same; CTY—Centre; RR—N. Y. C. & H. R.
S of H—Mules and Elec. hoist; track gauge 34 in.
S of M—Hand.
PP—Purchase power.

RED RUN COAL CO.
See Ralston Coal Co.

RED TOP COAL CO
No. 1 Mine, Drift Mine, "B" or Miller Vein Seam 34 to 36 in. thick.
PO—Hastings, Pa. SP—Same. CTY Cambria. RR—P.R.R., C. & C. Div.
PR—Chas. Hetrick, Hastings, Pa.
TR—Chas. Hetrick, " "
GM—Chas. Hetrick, " "
GS—Chas. Hetrick, " "
PA—Chas. Hetrick, " "
EM—Chas E. Schlicker, Spangler, Pa.
SCO—Jas. Commons & Sons. Buyer,—Guy Common, Hastings, Pa.
S of H—Mules; Track gauge 36 in.
S of M—Hand.
EMP—33. Last fiscal year output 24,236 tons. Sales Agent, Chas. Hetrick, Hastings, Pa.

REED COLLIERY CO.
General Office, Dudley, Pa.
GM—W. H. Reed, Dudley, Pa.
GS—W. H. Reed, " "
PA—W. H. Reed, " "
SCO—C. D. Reed, " "
Sales Agent, W. H. Reed, " "

Benedict No. 1 Mine, slope and drift, Barnett & Fulton Seam, 5 to 6 ft. thick.
PO—Dudley, Pa. SP—Same. CTY—Huntingdon. RR—H. & B. T.
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, total 200 H.P., 1 gen. unit, 250 volts D.C..
EMP—37. Last fiscal year output, 20,000.

Reed No. 2 Mine, slope, Moshannon Seam, 3 ft. thick.
PO—Berwinsdale, Pa. SP—Same. CTY—Cleafield. RR—P.R.R.
S of H—Mules and rope.
S of M—2 Elec. mach.
PP—1 gen. unit 250 volts D.C., 1 Pump. Power purchased.
EMP—47. Last fiscal year output 37,000 tons.

RELIANCE COKE CO.
General Office, Pittsburgh, Pa.
Denbo Mine; Shaft; Pittsburgh Seam, 72 to 100 in. thick.
PO—Denbo, Pa.; SP—Same; CTY—Washington; RR—P. R. R. Monon. Div.
PR—H. C. Fownes.....Pittsburgh, Pa.
TR—Wm. C. Fownes, Jr., " "
PA—W. E. Motheral, " "
GS—F. Moving.....Denbo, Pa.
EM—J. S. Goodlander.....Denbo, Pa.
MM—Chas. Ball, " "
SCO—Denbo Supply Co., Buyer, H. B. Sinsley, Denbo, Pa.
S of H—Mules and 2 Elec. loco.; track gauge 44 in.
S of M—7 Elec. mach.
PP—3 Rust Return tubular boilers, total 1000 H. P., 2 gen. units 275 volts D. C., 1 pump.
EMP—200. Coke ovens, 236 Rectangular. Last fiscal year output 160,000 tons.
Sales Agent, O. W. Mason, Pittsburgh, Pa.

REPUBLIC IRON & STEEL CO.
General Office, Youngstown, O.
PR—T. J. Bray.....Youngstown, O.
PR—Asst—J. E. Perry, " "
TR—H. L. Rownd, " "
PA—C. I. Starrett, " "
GS—George W. Gehres..Republic, Pa.
EM—F. M. Newhall, " "
SCO—Crescent Supply Co., Buyer H. H. King, Republic, Pa.

Republic Mine; Shaft; Pgh. Seam.
PO—Republic, Pa.; SP—Same; CTY—Fayette; RR—P. R. R. Monon. Div.
MS—Geo. H. Morse.....Republic, Pa.
S of H—8 Comp. air loco. and mules.
S of M—16 Comp. air mach.
PP—5 Water tube boilers, 2 gen. units, 250 D. C., 4 comp. and 1 pump, 400 Bee Hive coke ovens.

Martin Mine; Drift; Pgh. Seam.
PO—Martin, Pa.; SP—Same; CTY—Fayette; RR—P. R. R., Monon. Div.
MS—B. R. Lindsay.....Martin, Pa.
S of H—3 Elec. loco. and mules.
S of M—2 Elec. mach and hand.
PP—3 Water tube boilers, 2 gen. units 250 volts D. C., 1 pump; 244 Bee Hive coke ovens.

Bowood Mine Drift; Pgh. Seam.
PO—Smithfield, Pa.; SP—Bowood, Pa.; CTY—Fayette; RR—B. & O.
MS—A. B. Cather .... Smithfield, Pa.
S of H—Mules.
S of M—Hand.

Acheson Mine; Drift; Pgh. Seam.
PO—Gans, Pa.; SP—Acheson, Pa.; CTY—Fayette; RR—B. & O.
S of H—Mules.
S of M—Hand.
PP—1 return tubular boiler; coke ovens, 120 Bee Hive.

RICE COAL & COKE CO.
PO—Connellsville, Pa.; CTY—Fayette.
GM—W. P. Stillwagon..Connellsville, Pa.
Formerly Rose Mine of Sunshine Coal & Coke Co.

RICES LANDING COAL & COKE CO.
Rices Landing Mine, Shaft, Pgh. Seam 7 ft. 4 in.
PO—Rices Landing, Pa.; SP—Same CTY—Greene; RR—P.V.& C.R.R.
PR—Robert S. George....Pgh., Pa.
PA—Robert S. George, " "
GM—Jas. R. Black, Rices Landing, Pa.
GS—Jas. R. Black, " "
EM—Wm. Gondy, " "
MM—Wm. Fuller
EE—Robt. Black, " "
SCO—McElhose Supply Co., Buyer, Mr. McCleary.
S of H—3 elec. loco. and mules; track gauge 44 in.
S of M—6 elec. mach. and hand.
PP—Water tube boilers, total 600 H. P., 2 gen. units, 250 volts, D. C., 1 air comp., 4 pumps.
Sales Agent, Kilbuck Coal Co., Pittsburgh, Pa.

RICH HILL COAL CO.
General Office, Philadelphia, Pa.
Rich Hill No. 1 and 2 Mines; Drift; E Seam, 36 to 50 in. thick.
PO—Hastings, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.; Hastings Branch.
PR—J. L. Kemmerer, Philadelphia, Pa.
TR—C. H. Jacobs, " "
GM—Jas. H. Allport...Hastings, Pa.
PA—W. H. Allport, " "
MS—W. H. Allport , " "
EM—Chas. E. Schlicher, Spangler, Pa.
EE—M. M. Stevens ....Hastings, Pa.
S of H—7 elec. locos. Track gauge 36 in.
S of H—Hand and 10 Elec. mach.
PP—Power purchased.
EMP—500. Last fiscal year output 327,089 tons.

RICH HILL COKE CO.
General Office. Uniontown, Pa.
Rich Hill Mine; Slope, Connellsville Seam, 72 to 84 in. thick.
PO—Out Crop, Pa.; SP—Smithfield, Pa. CTY—Fayette; RR—B. & O., Fairmont Div.
PR—A. L. Moser.....Uniontown, Pa.
TR—Wm. M. Thompson, " "
GM—D. S. Richey, " "
GS—D. S. Richey, " "
PA—D. S. Richey, " "
EM—H. B. Gans, " "
MS—Ewing Wilson,....Fairchance, Pa.
MM—Mike Louish.....Out Crop, Pa.
SCO—Out Crop Supply Co., Out Crop, Pa.
S of H—1 Elec loco.
S of M—Hand.

Continued on Next Page.

PP—2 Return tubular boilers, 2 gen. units each 125 volts D. C.
EMP—60; Coke ovens, 120 Bee Hive.
Sales gency, J. H. Hillman & Sons, Pittsburgh, Pa.

RICHLAND COAL & MINING CO
Out of business.

RINN, S. A. & CO.
General Office, Punxsutawney, Pa.
Frostburg Mine; Drift; L. Freeport Seam 5 ft. thick.
PO—Frostburg, Pa.; SP—Same; CTY—Jefferson; RR—B. R. & P.
PR—S. A. Rinn....Punxsutawney, Pa.
GM—S. A. Rinn, " "
TR—E. H. Winslow, " "
PA—E. H. Winslow, " "
GS—W. N. Trussell, " "
CE—H. M. Kanarr, " "
MM—E. C. Jenkin .....Dayton, Pa.
MS—John Cummings....Frostburg, Pa.
S of H—1 elec. loco. Track gauge 42 in.
S of M—2 elec. mach.
PP—4 Water tube boilers, total 600 H. P., 2 gen. units 500 volts D. C., 1 comp. and 4 pumps.
EMP—300. Last fiscal year output 250,000 tons.

RIVERSIDE COAL MINING CO.
Riverside No. 1 Mine, Drift, "E" and "C" Seam, 3 ft. thick
PO—South Fork, Pa.; SP—Same; CTY—Cambria. RR—P.R.R.
PR—Chas. H. Cutter..Boston, Mass.
TR—B. C. Leonard..South Fork, Pa.
GM—B. C. Leonard, "
GS—B. C. Leonard, " "
PA—B. C. Leonard, " "
S of H—Elec. loco.; track gauge 36 in.
S of M—Hand.
Sales Agent, Gorman-Leonard Coal Co., Worcester, Mass.

ROARING RUN MINING COMPANY.
General Office, Blairsville, Pa.
Roaring Run Mine, Drift; "E" or Up. Freeport Seam; 3 to 5 ft. thick.
PO—Apollo, Pa.; SP—Roaring Run, Pa.; CTY—Armstrong; RR—P.R.R., Conemaugh Div.
PR—W. P. Graff.....Blairsville, Pa.
GM—F. M. Graff, " "
PA—F. M. Graff, " "
MS—Ernest Fletcher ...Saltsburg, Pa.
SM—H. H. Murray.....Apollo, Pa.
CE—Albert Smith.....Saltsburg, Pa.
EM—Albert Smith, " "
MM—Chancey Shipley, " "
EE—H. A. Scott, " "
SCO—Kiskiminetas Supply Co., Roaring Run Store, Buyer, Wm. G. Fletcher, Blairsville, Pa.
S of H—4 Elec. loco., track gauge 42 in.
S of M—9 Elec. mach.
PP—2 Erie City return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts.
EMP—240. Last fiscal year output 201,753 tons.
Sales Agent, Knickerbocker Fuel Co., New York, N. Y.

ROCHESTER COAL CO.
Rochester Mine. CTY—Clearfield.
GS—Thomas Kearns.....Du Bois, Pa.
No report.

ROCHESTER & PITTSBURGH COAL & IRON CO.
General Office, Punxsutawney, Pa.
PR—L. W. Robinson..Punxsutawney, Pa.
TR—George H. Clune..Rochester, N.Y.
GM—F. M. Fritchman..Indiana, Pa.
EM—H. M. Kanarr, Punxsutawney, Pa.
George W. Brymer, Indiana, Pa.
PA—H. C. Smith..Punxsutawney, Pa.
Div Supt—I. J. Harvey, " "
Asst GM—Frank Pardoe, Punxsutawney, Pa.
EE—L. W. Householder Punxsutawney, Pa.
SCO—Mahoning Supply Co., Mgr. D. H. McIntyre, Punxsutawney, Pa.
Sales Mgr., Geo. L. Eaton, Rochester, N. Y.

Adrian and Florence Mines; Slope.
PO—Delancey, Pa.; SP—Same; CTY—Jefferson; RR—B. R. & P.
MS—George Morris.....Delancey, Pa.
S of H—26 Elec. and 3 steam loco.
S of M—69 Comp. air mach.
PP—38 Return tubular boilers, total 3,700 H. P., 10 comp. and 8 pumps.
EMP—1,017.

Walston Mine; Slope.
PO—Walston, Pa.; SP—Same; CTY—Jefferson; RR—B. R. & P.
MS—W. M. Scott.....Walston, Pa.
S of H—1 Elec. and 2 steam loco.
S of M—12 Comp. air mach.
PP—12 Return tubular boilers, total 1120 H. P. and 2 comp.
EMP—314.

Eleanora Mines; Shaft; Drift and Slope.
PO—Elenora, Pa. SP—Elenora, Pa. CTY—Jefferson; RR—B. R. & P.
MS—John L. White .....Eleanor, Pa
S of H—14 Elec. and 2 steam loco.
S of M—56 Elec. mach.
PP—24 Return tubular boilers, total 3480 H. P., 7 comp. and 5 pumps.
EMP—657.

Helvetia Mine, Shaft.
PO—Helvetia, Pa. SP—Stanley, Pa. CTY—Jefferson; RR—B. R. & P.
MS—I. J. Harvey.....Helvetia, Pa.
S of H—7 Elec. loco.
S of M—27 Comp. air mach.
PP—14 Return tubular boilers; total 1,820 H. P., 4 comp. and 3 pumps.
EMP—462.

Cowan Mine; Drift.
PO—Cowansville, Pa.; SP—Cowan, Pa.; CTY—Jefferson; RR—B. R. & P.
MS—I. J. Harvey....Helvetia, Pa.
S of H—Elec. loco. and rope.
S of M—4 comp. air mach.
PP—2 Return tubular boilers, total 300 H. P., 2 comp. and 1 pump.
EMP—86.

Lucerne Mine.
PO—Lucerne, Pa.; SP—Same; CTY—Indiana. RR—B. R. & P.
MS—C. W. Stuart.....Lucerne, Pa.
Coke ovens, 1200.

ROCK RUN COAL CO.
Rock Run Mine. CTY—Lycoming.
MS—Daniel T. Jenkins....Blossburg, Pa.
No report.

ROCKHILL IRON & COAL CO. (THE)
General Office, Philadelphia, Pa.
PR—G. Theo. Roberts, New York, N.Y.
TR—S. J. Livingston....Phila., Pa.
GM—J.S. Sommerville, Robertsdale, Pa
PA—J. K. Morrison, " "
EM—J. F. Neilan, " "
EE—R. H. Felton.....Robertsdale, Pa.
Sales Agent, S. J. Livingston, Phila, Pa.

No. 1 Mine; Drift; Fulton Seam, 54 in. thick.
PO—Robertsdale, Pa.; SP—Same; CTY—Huntingdon RR—E. B. T.
MS—C. M. Fick.....Robertsdale, Pa.
S of H—Tail rope and mules.
S of M—Hand.
PP—Steam from Robertsville Mine; Electricity from Woodvale Mine.
EMP—125. Last fiscal year output 64,333 tons.

Robertsdale Mine, Slope, Fulton seam, 4 1-2 ft. thick.
PO—Robertsdale, Pa., SP—Same, CTY Huntingdon, RR — East Broad Top RR.
MS—W. J. Young, Robertsdale, Pa.
S of H—Mules, tail rope and elec. hoists. track gauge 36 in.
S of M—Hand.
PP—3 Erie and 1 Keeler R turn tubular boilers, total 480 H. P., 4 pumps.
EMP—375. Last fiscal year output 234,140 tons.

Woodvale Mine, Shaft, Fulton Seam, 4 1-2 ft. thick.
PO—Robertsdale, Pa.; SP—Same, CTY—Huntingdon. RR—East Broad Top RR.
MS—E. A. Hawley.....Ward, Pa.
S of H—Mules, tail rope and air hoists. Track gauge, 36 in.
S of M—Hand.
PP—4 Water tube B. & W. boilers, total 940 H. P., 1 gen. unit 2300 volts A. C., 3 phase, 60 cycles, 1 air compressor, and 4 pumps.
EMP—300. Last fiscal year output 176,554 tons.

ROCKY RIDGE COAL CO.
General Office, E. Pittsburgh, Pa.
Wrays Hill Mine, Slope, Fulton Seam, 48 to 168 in. thick.
PO—Robertsdale, Pa.; SP—Rocky Ridge Station, Pa.; CTY—Huntingdon; RR—H & B. T.
PR—W. A. Thomas..E. Pittsburgh, Pa.
TR—F. C. Lane, " "
GS—J. Ross Griffith....Broad Top, Pa.
EM—J. M. Afrien....Huntingdon, Pa.
S of H—1 Steam loco., mules and rope; track gauge 36 in.
S of M Hand.
PP—1 Nagle water tube boilers, 35 H. P.; 2 pumps.
EMP—45 Last fiscal year output 27,000 tons.

ROGERS COAL CO.
General Office, Scottdale, Pa.
Rogers Mine; Drift; Seam 60 in. thick.
PO—Rogers Mills, Pa.; SP—Indian Creek, Pa.; CTY—Fayette; RR—B. & O., Indian Creek Valley Br.
PR—J. W. Newbrough, Scottdale, Pa.
TR—M. E. Reid, " "

ROSS RUN COAL CO.
No. 1 and 2 Mines, Drift, L. Freeport Seam, 3 ft. 6 in. to 5 ft. thick.
PO—Punxsutawney, Pa.; SP—Fordham, Pa.; CTY—Jefferson; RR—P.R.R. Bellwood Branch.
MS—B.D. Hampson, Punxsutawney, Pa.
EM—B. D. Hampson, Punxsutawney, Pa.
S of H—Mules, track gauge 36 in.
S of M—Hand.

ROWE, C. J. & BROS.
Hamilton and Mystic Mines, Drift, Redstone Seam 3 1-2 to 5 ft. thick.
PO—Meyersdale, Pa.; SP—West Salisbury, Pa.; CTY—Somerset; RR—B. & O., Salisbury Branch.
PR—C. J. Rowe.....Meyersdale, Pa.
GS—C. J. Rowe, " "
PA—C. J. Rowe, " "
TR—Fred E. Rowe, " "
GM—Fred E. Rowe, " "
SCO—The Rowe Mercantile Co., Buyer Fred E. Rowe, Meyersdale, Pa.
S of H—Mules and rope, track gauge 42 in.
S of M—Hand.
EMP—127. Last fiscal year output 37,542 tons.

RUMMEL COAL MINING CO.
PO—Windber, Pa.; SP—Same; CTY—Somerset; RR—P. R. R.
GS—John Lockrie.....Windber, Pa.
MS—Charles Estep, " "
S of H—Mules.
EMP—48. State report.

RUSSELL COAL CO.
Victor Nos. 24, 25, 26, 27, and 29 Mines: Slope; "B" & "D" Seams; 3½ ft. thick.
PO—Clymer, Pa.; SP—Same; CTY—Indiana. RR—N.Y.C., and P. R. R.
PR—Fembrant Peale.
PA—G. E. Metzger..St. Benedict, Pa.
MS—W. D. Dunsmore....Clymer, Pa.
SM—E. H. Harvey, " "
S of H—Rope, mules and 8 elec. loco., track gauge 3 ft.
S of M—Hand, 8 Elec. and 60 comp. air mach.
PP—8 Ames water tube boilers total 1800 H. P., 3 gen. units, 550 volts; 4 air comp.; 7 pumps.
EMP—750.

RUSSETT COAL CO.
General Office, Mineral Point, Pa.
Russett Mine; Drift. "B" Seam, 48 in. thick.
PO—Coupon, Pa.; SP—Kittanning Point, Pa.; CTY—Cambridge; RR—P. R. R.; Kittanning Run Br.
PR—W. S. Lee.....Altoona, Pa.
TR—James A. Page..Mineral Point, Pa.
GM—James A. Page, " "
PA—James A. Page, " "
MS—James A. Page, " "
CE—D. W. Sillyman.....Altoona, Pa.
S of H—Mules.
S of M—Hand.
EMP—20; Last fiscal year output 11,039 tons.
Sales Agent, C. B. Loudon, Altoona, Pa; Successors to Loudon & Page.

SACKETT, H. R. COAL & COKE CO.
Sackett Mines; Slope; Pgh. Seam.
PO—Smithfield, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
GM—H. R. Sackett, ..Smithfield, Pa.
PA—H. R. Sackett, " "
EM—J. P. Boyle, " "
MS—A. C. Jones, " "
SCO—Crystal Supply Co., " "
S of H—Mules.
S of M—Hand.
PP—Boiler 50 H. P.
EMP—40; Coke ovens 30.

SALINA COAL & COKE CO.
General Office, Greensburg, Pa.
Shaft Mine; Freeport Seam.
PO—Salina, Pa.; Same; CTY—Westmoreland. RR—P. R. R., Conemaugh Branch.
PR—George B. Drerman, Plymouth, O.
TR—E. S. Naly.....Greensburg, Pa.
GM—E. A. Ferrin, " "
GS—Harold Copping, " "
CE—Warren Mitchell, " "

SALTSBURG COAL MINING CO.
Foster Nos. 1, 2 and 3 Mines, Drift.
PO—Edri, Pa.; SP—Same; CTY—Indiana; RR—P. R. R.
GM—L. W. Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
MS—Thos. Adams.....Edri, Pa.
EM—E. A. Watters, " "
S of H—3 Elec. locos.
S of M—Elec. machines.
PP—5 Return tubular boilers, total 750 H. P., 1 gen. units, 250 volts D. C., 4 pumps.
EMP—364. Last fiscal year output 421,967 tons.

SANFORD, J. H., COAL CO.
General Office, Park Bldg., Pittsburgh, Pa.
Armide Mine; Drift; Pgh. Seam, 4½ to 6 ft. thick.
PO—Burgettstown, Pa.; SP—Same; CTY—Washington; RR—P. R. R., Cherry Valley Branch.
PR—J. H. Sanford....Pittsburgh, Pa.
TR—R. P. Burgan, " "
GS—G. F. Oster, " "
PA—R. B. Haverstick, " "
MS—J. P. McCune..Burgettstown, Pa.
EM—J. W. Adams.....Oakdale, Pa.
SCO—Raccon Supply Co., buyer, W. B. Shiner, Burgettstown, Pa.
S of H—9 Elec. locos., track gauge 42 in.
S of M—Hand and 12 elec. mach.
PP—2 Oil City water tube boilers, total 400 H. P., 1 gen. unit, 500 volts D. C.
EMP—250. Last fiscal year output 225,000. Sales Mgr. M. M. Griest, Pittsburgh, Pa,

SAPPER COKE CO.
Sapper Mine, Drift mine, Pgh. Seam 8 ft. thick.
PO—Smithfield, Pa.; SP—High House, Pa.; CTY—Fayette. RR—B. & O.; Smithfield & Masontown Br.
TR—Isaac Hunt.....Uniontown, Pa.
GM—W. J. Reilly.....Smithfield, Pa.
PA—W. J. Reilly, " "
MS—W. J. Reilly, " "
S of H—Mules.
S of M—Hand.
EMP—27. Coke ovens, 26 Bee Hive. Last fiscal year output 12,694.87 tons.

SAVAN COAL CO.
Savan No. 1 Mine.
PO—Snow Shoe, Pa. CTY—Indiana.

SCHIPPER BROTHERS COAL CO.
General Office, Boston, Mass.
PR—Fred G. Schipper..Boston, Mass.
TR—C. F. Schipper, " "
GM—C. F. Schipper, " "
PA—C. F. Schipper, " "
GS—John Schipper, Six Mile Run, Pa.
SCO—Barnett Supply Co., Buyer, B. E. Cutchall, Six Mile Run, Pa.
Sales agent, C. F. Schipper, Boston, Mass.

Ladysmith Nos. 1, 2, 3 and 4, Drift and Slope, Fulton and Kelly Seam 4 ft. thick; Fulton Seam 5 1-2 ft. thick.
PO—Six Mile Run, Pa., SP—Coaldale, Pa., CTY—Bedford. RR—H. & B. T.
MS—Frank Grimes, Six Mile Run, Pa.
S of H—Mules and gravity; track gauge 38 in.
S of M—Hand.
PP—1 Erie boiler, 80 H. P.
EMP—100.

Crescent No. 2, Bartle No. 2 and Cuba No. 1, Drifts, Barnett Seam, 3 ft. thick.
PO—Six Mile Run, Pa., SP—Coaldale, Pa., CTY—Bedford; RR—H. & B. T.
MS—Geo. Gould, Six Mile Run, Pa.
S of H—Mules and gravity; track gauge 38 in.
S of M—Hand.
EMP—50.

SCOOTAC MINING CO.
General Office, Williamsport, Pa.
Scootac Mine, Drift, Seam 48 to 58 in.
PO—Lock Haven, Pa.; SP— North Fork, Pa.; CTY—Clinton. RR—P. R. R., Tangas Branch.
PR—C. La Rue Munson, Williamsport, Pa.
PA—W. R. Kramer, " "
TR—C. G. Burk...Williamsport, Pa.
MS—W. H. Ellis.....Lock Haven, Pa.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—1 Water tube boiler, total 25 H. P., 2 pumps.
EMP—50. Last fiscal year output 27,350 tons.

SCOTT COAL MINING CO.
Mascot No. 1 Mine; Slope, "B" Seam, 48 in. thick.
PO—Philipsburg, Pa.; SP Houtzdale, Pa.; CTY—Centre; RR P. R. R.
GM—George Scott, Sr...Philipsburg, Pa.
TR—H. B. Scott, " "
GM—H. B. Scott, " "
PA—H. B. Scott, " "
MS—D. R. Williams....Houtzdale, Pa.
S of H—2 Elec. loco.; track gauge 42 in.
S of M—2 Elec. mach.
PP—1 150 K. W.. M. G. Sett, 3 phase. Power purchased.
EMP—100.
Sales Agents, H. B. Scott & Co., Philipsburg, Pa.

SCOTT, H. B. & CO.
See Cuba Coal Co.

SCOTT, H. B. & CO.
General Office, Philipsburg, Pa.
Colorado No. 5 Mine; Drift.
PO—Munson Station, Pa.; SP—Same; CTY—Clearfield; RR—N. Y. C. & H.
GM—H. B. Scott....Philipsburg, Pa.
PA—H. B. Scott, " "
S of H—Elec. loco.,
S of M—Elec. mach.
PP—3 Boilers, total 450 H. P., gen. units 500 volts D. C.

SCALP LEVEL COAL MINING CO.
General Office, Windber, Pa.
Scalp Level Mine; Drift.
PO—Scalp Level, Pa.; SP—Same. CTY—Cambria; RR—P.R.R.
PR—John Lochrie.....Windber, Pa.
PA—Geo. Tyler. " "
S of H—Elec. loco.
S of M—Elec. mach.
PP—250 volts D. C. Power purchased.

SEESE & MANGES COAL CO.
Egolf Mine; Drift; "B" Seam, 48 to 60 in. thick.
PO—Cairnbrook, Pa.; SP—Same; CTY—Somerset; RR—P. R. R.
PR—J. O. Seese, Cairnbrook, Pa.
GM—J. O. Seese, " "
CE—J. O. Seese, " "
MS—E. C. Manges, " "
SM—G. D. Lloyd, " "
S of H—Mules.
S of M—Hand.
PP—1 Compressor.
EMP—50.
Output, at present 100,000 tons.

SEGER BROS.
PR—Samuel Seger.....Ligonier, Pa.
TR—John Seger, " "
PA—John Seger, " "
GM—Samuel Seger, " "
GS—Samuel Seger, " "
CE—W. H. Matthews, " "
EM—Robert McInnes, " "
MM—Walter Eckard.
SCO—Wilpen Supply Co., Buyer, L. L. Tosh, Ligonier, Pa.
Sales Agent, H. L. Bracken.

Ligonier Diamond Mine, Drift, Pgh. Connellsville Steam Coal, 7 ft. thick.
PO—Ligonier, Pa., SP—Wilpen Pa. CTY—Westmoreland. RR—Ligonier Valley.
S of H—Mules and 1 gasoline motor; track gauge, standard.
S of M—Hand.
PP—Boiler, 100 H. P., 1 pump.
EMP—70. Last fiscal year output 84,158 tons.

St. Clair Mine, Drift, Pgh. Connellsville Steam Coal, 7 ft. thick.
PO—Ligonier, Pa., SP—Wilpen, Pa., CTY—Westmoreland. RR—Ligonier Valley.
S of H—Mules.
S of M—Hand.
EMP—65. Last fiscal year output 83,210 tons.

SEIBEL COAL CO.
Seibel Mine.
PO—Indian Head, Pa.; SP—Rogers Mills, Pa.; CTY—Fayette.
No report.

SENECA COAL MINING CO.
General Office, Prudential Bldg., Buffalo, N. Y.
Seneca Mine, Drift, Freeport Seam 5 ft. thick.
PO—Chambersville, Pa.; SP—Same; CTY—Indiana. RR—B. R. & P.
PR—W. M. Campbell, Buffalo, N. Y.
PA—W. M. Campbell, " "
GM—W. M. Campbell, " "
TR—Roger Joyce, " "
MS—Thos. Donnelly, Chambersville, Pa.
SM—S. B. Remaley, " "
SCO—Seneca Mercantile Co.; Buyer, D. H. McIntyre, Punxsutawney, Pa.
S of H—4 Elec. loco.
S of M—Compressed air machines.
PP—4 Water tube boilers, total 600 H. P.
EMP—250. Last fiscal year output 196,836.14 tons.
Sales Agent, P. J. Stapleton. Buffalo, N. Y.

SHADE CREEK COAL CO.
General Office, Johnstown, Pa.
PR—Jas. P. Thomas.....Johnstown, Pa.
Secy—F. D. Baker, " "
GS—Chas. A. Owen, " "

SHADE COAL MINING CO.
General Office, Mt. Pleasant, Pa.
Hagevo Mine, Drift, "B" or Miller Seam, 3 1-2 to 4 ft. thick.
PO—Hagevo, Pa., SP—Same, CTY—Somerset. RR—So. Fork Br., P. R. R.
PR—I. F. Overholt, Mt. Pleasant, Pa.
TR—J. W. Overholt, " "
GM—I. F. Overholt, " "
PA—I. F. Overholt, " "
MS—Robt. B. Naughton, Havego, Pa.
SCO—Havego Supply Co., Ltd., Buyer, C. O. Steppe, Havego, Somerset Co., Pa.
S of H—2 Gasoline loco., track gauge 36 in.
S of M—Hand.
EMP—150. Last fiscal year output 52,746 tons.

SHANIL COAL CO.
Shanil Mine; Drift; Barnett Seam, 36 to 48 in. thick.
PO—Saxton, Pa.; SP—Riddlesburg, Pa.; CTY—Bedford; RR—H. & B. T.
PR—George Moyle, ...Saxton, Pa.
CM—George Moyle, " "
TR—R. L. Worsing, Philadelphia, Pa.
S of H—Mules.
S of M—Hand.
PP—Power purchased.
EMP—4.

SHANNON COAL CO.
Martha No. 3 and Martha Slope; Slope and Drift.
PO—Dudley, Pa.; SP—Same; CTY—Huntingdon; RR—H. & B. T.
GS—W. W. E. Shannon, Saxton, Pa.

SHANNON COAL & COKE COMPANY
Martha Nos. 2 and 3, Drift; Connellsville Seam, 90 to 108 in. thick.
PO—Dawson, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
PR—Isaac Hunt.....Uniontown, Pa.
TR—Bob Hunt, " "
GM—Henry R. Fitterington, " "
MS—Anton Luxner .....Dawson, Pa.
PA—W. A. Stone....Uniontown, Pa.
EM—M. A. Crawford, " "
S of H—Mules and 1 steam loco., track gauge 35 in.
S of M—Hand.
EMP—18. Output 100 tons per day.
Sales Agent, W. A. Stone, Uniontown, Pa.

SHARON COAL & LIMESTONE COMPANY.
PR—W. H. Clingerman, Carnegie Bldg., Pittsburgh, Pa.
TR—Philip Keller, Carnegie Bldg., Pittsburgh, Pa.
PA—T. S. Duncan, Carnegie, Bldg., Pittsburgh, Pa.
GS—F. P. Filer.....Mercer, Pa.
EM—J. H. Robinson, " "
EE—Irvin Spencer, " "
MS—John Marshall .....Volant, Pa.

No. 2 Mine; Shaft, Brookville Seam, 36 to 42 in. thick.
PO—Volant, Pa., R. F. D. No. 2, SP—Drake, Pa.; CTY—Lawrence; RR—P. R. R., Wolf Creek Br.
MF—Wm. Parry and Wm. Richard, Volant, Pa.
S of H—Rope; track gauge 37 in.
S of M—6 Comp. air mach and hand.
PP—5 Return tubular boilers, total 500 H. P. 1 compressor, 3 pumps.
EMP—206. Last fiscal year output 121,298 tons.

Nos. 3 and 4 Mines; Drifts, Kittanning Seam.
PO—Slippery Rock, Pa.; SP—Redmond, Pa.; CTY—Butler; RR—P. R. R., Wolf Creek Br.
MF—George McCrea and Henry Horseman, Slippery Rock, Pa.
S of H—Rope; track gauge 37 in.
S of M—Hand.
PP—Boiler 150 H. P., 1 pump.
EMP—168. Last fiscal year output 89,078 tons.

No. 5 Mine; Shaft, Brookville Seam.
PO—Mercer, Pa.; R. F. D. No. 6; SP—Drake, Pa.; CTY—Mercer; RR—P. R. R., Wolf Creek, Pa.
MF—John Wallace, Volant, Pa., R. F. D. No. 65.
S of H—3 Elec. loco.; track gauge 37 in.
S of M—5 Elec., 8 comp. air mach.
PP—5 Return tubular boilers, total 550 H. P., gen. units 250 volts D. C., 2 compressors, 2 pumps.
EMP—239. Last fiscal year output 160,164 tons.

SHAWMUT MINING CO.
General Office, St. Mary's, Pa.
PR—Frank Sullibvan Smith, New York, N. Y.
TR—H. S. Hastings, St. Mary's, Pa.
PA—H. S. Hastings, " "
GS—W. R. Craig, " "
SCO—Shawmut Commercial Co., Buyer, E. J. McLaughlin, St. Mary's, Pa.
Sales Agent, C. H. Jones, Buffalo, N. Y., Shawmut C. & C. Co.
No. 5 Elbon Mine; Drift; L. Kittanning Seam; 24 to 36 in. thick.
PO—Elbon, Pa.; SP—Same; CTY—Elk; RR—P. S. & N.
MS—James Jones.....Byrnedale, Pa.
SM—Harry Mullaney.....Elbon, Pa.
S of H—6 Elec. loco.; track gauge 30 in.
S of M—16 Elec. mach. and hand.
PP—2 Return tubular boilers, total 300 H. P., 2 gen. units 250 volts D. C., 1 comp. and 6 pumps.
EMP—218. Last fiscal year output 151,000 tons.

No. 10 Shawmut Mine; Drift; L. Kittanning Seam, 18 to 32 in. thick.
PO—Shawmut, Pa.; SP—Same; CTY—Elk; RR—P. S. & N.
MS—James Jones.....Byrnedale, Pa.
SM—F. Jackson.....Shawmut, Pa.
S of H—1 Steam loco. and mules; track gauge 30 in.
S of M—Hand.
EMP—42. Last fiscal year output 18,000 tons.

No. 31 Byrnedale; Drift; L. Kittanning Seam, 32 to 44 in. thick. Washery, not in operation, 3|1|14.
PO—Byrnedale, Pa.; SP—Same; CTY—Elk; RR—P. S. & N.; Kersey Branch.
MS—James Jones.....Byrnedale, Pa.
SM—L. H. Garbarino, " "
S of H—7 Elec. loco.; track gauge 30 in.
S of M—3 Elec. and 22 comp. air mach.
PP—6 Return tubular Erie boilers, total 900 H. P., 2 gen. units 250 volts D. C., 3 air comp. and 6 pumps.
EMP—215. Coke ovens, 89 Bee Hive, 11 Ramsay. Last fiscal year output 137,000 tons.

No. 41 Cardiff Drift; L. Kittanning Seam 32 ti 44 in thick.
PO—Force, Pa.; SP—Same; CTY—Elk; RR—P. S. & N., Kersey Br.
MS—James Jones.....Byrnedale, Pa.
SM—E. A. Hewitt.....Force, Pa.
S of H—1 Steam loco. and mules; track gauge 30 in.
S of M—Hand.
PP—1 Return tubular Erie boiler, 150 H. P., 1 comp. and 1 pump.
EMP—204. Last fiscal year output 112,000 tons.

No. 42 Brown's Run Mine; Drift; L. Kittanning Seam; 32 to 40 in. thick.
PO—Byrnedale, Pa.; SP—Same; CTY—Elk; RR—P. S. & N. Kersey Branch.
MS—James Jones.....Byrnedale, Pa.
SM—L. H. Garbarino, " "
S of H—4 Elec. loco.; track gauge 40 in.
S of M—5 elec. mach. and hand.
PP—2 Return tubular boilers, Erie, total 300 H. P., 1 gen. unit; 250 volts D. C., 3 pumps.
EMP—160. Last fiscal year output 105,000 tons.

Ramsay Mine; Drift; L. Freeport Seam, 42 to 56 in. thick.
PO—Ramsaytown, Pa.; SP—Same; CTY—Jefferson; RR—P. S. & N., Ramsaytown Branch.
MS—Hugh Reynolds..Ramsaytown, Pa.
SM—J. E. Bixby, " "
S of H—4 Elec. loco.; track gauge 36 in.
S of M—24 Elec. mach. and hand.
PP—4 Return tubular, Union boilers, total 600 H. P., 2 gen. units, 250 volts D. C., 2 comp. and 2 pumps.
EMP—345. Last fiscal year output 313,000 tons.

SHEARN BROTHERS.
Pittsburgh Seam, 5 ft. thick.
PO—Canonsburg, Pa.
PR—J. G. Shearn...Canonsburg, Pa.
MS—J. G. Shearn, "
TR—J. W. Shearn, " "
PA—J. W. Shearn, " "
S of H—Mules; track gauge 32 in.
S of M—Hand.
EMP—11.

SHENANGO COAL CO.
General Office, New Casle, Pa
PR—C. H. Johnson....New Castle, Pa.
TR—Thos. H. Hartman, " "
GM—David H. Kay, " "
GS—David H. Kay, " "
PA—W. H. Britton, " "
EM—J. W. Dinsmore, " "
MM—S. Barnes.....Grove City, Pa.

Shenango Mine; Shaft, Brookville Seam, 42 to 50 in. thick.
PO—Grove City, Pa.; SP—Same; CTY—Mercer; RR—B. & L. E.
MS—Joseph Allen,.. ..Grove City, Pa.
S of H—Mules.
PP—3 Erie City, water tube boilers, total 450 H. P., 2 pumps.
EMP—127. Last fiscal year output 52,000 tons.

Johnson Mine; Drift, Middle Kittanning Seam 36 to 51 in. thick.
PO—Keister, Pa.; SP—Hallston Station, Pa.; CTY—Butler RR—B. & L. E.
MS—Joseph Allen.....Grove City, Pa.
S of H—Mules.
PP—1 Erie City water tube boilers, 100 H. P.
EMP—70. Annual output to be 25,000 tons.
Note—New mines will commence to ship coal July 1st.

SHENANGO FURNACE CO. (THE)
General Office, Oliver Bldg., Pgh., Pa.
Wilpen Mine; Drift; Pgh. Seam, 6 to 8 ft. thick.
PO—Wilpen, Pa.; SP—Same; CTY—Westmoreland; RR—Ligonier Valley, Wilpen Br.
PR—W. P. Snyder....Pittsburgh, Pa.
Vice Pr—C. D. Dyer, " "
TR—Henry Irwin, Jr., " "
GM—A. K. Renwick.....Wilpen, Pa.
PA—Stewart Dyer, " "
CE—So. Penn Engineering Co., Connellsville, Pa.
EM—J. M. Mull.....Wilpen, Pa.
EE—F. M. Ramsey, " "
MM—J. B. Emmert, " "
MS—Wm. Pemberthy, " "
SCO—Walker & Co., Inc., Buyer, Harry Walker, Wilpen, Pa.
S of H—2 Elec. loco. and mules; track gauge, 50 in.
S of M—Hand.
PP—1 Stirling water tube, 2 Erie return tubular boilers, total 580 H. P., 3 gen. units 2200 volts, A. C., 3 phase, 60 cycles, 250 volts D. C.
EMP—250; coke ovens 167, Bee Hive. Last fiscal year output 350,000 tons.
Sales Agent, H. N. Wilson, Secy., Pittsburgh, Pa.

SHERWIN, SAMUEL
Kincaid and Enterprise Mines, Drifts; Freeport Seam 3 ft. 10 in. to 5 ft. thick.
PO—Karns City, Pa.; SP— Same; CTY Butler; RR—B. & O., Western Allegheny Div.
GS—Samuel Sherwin..Karns City, Pa.
S of H—1 Steam and 1 gasoline loco., mules and rope; track gauge 30 in.
S of M—9 comp. air mach.
PP—5 Return tubular boilers total 465 H. P. 3 air compressors.
EMP—156. Last fiscal year output 132,372 tons.

SHINN, W. H., COAL CO.
General Office, Diamond Bank Bldg., Pittsburgh, Pa.
PO—Burgettstown, Pa.; SP—Raccoon Pa.; CTY—Washington.
PR—James H. Hammond..Pittsburgh, Pa.
GM—Wm. H. Shinn, " "
GS—W. H. Shinn.....Carnegie, Pa.
PA—W. H. Shinn, " "
TR—W. H. Shinn, " "
MS—Robt. Carmichael, Burgettstown, "
S of H—2 Elec. loco.
S of M—3 Mach.
PP—1 pump. Purchase power.
EMP—125.

SHOEMAKER COAL MINING CO.
General Office, 1507 Real Estate Trust Bldg., Phila., Pa.
PR—T. S. Shoemaker.....Phila., Pa.
GM—P. L. Wolfe, " "
PA—P. L. Wolfe, " "
Sales agent, P. L. Wolfe, " "

Wilmore Nos. 1, 2 and 3 and Miller Slope Mines, Clope, Sonman Seam, 4 ft. thick.
PO—Myra, Pa.; SP—Portage and Lil Pa.; CTY—Cambria; RR—P. R.R.
MS—Wm. Brown.....Myra, Pa.
S of H—Mules and rope.
S of M—Hand.
Output 1,500 tons daily.

SKELLY, W. B., COAL CO.
Elizabeth Mine, Drift, Pittsburgh Seam, 6 ft. thick.
PO—Export, Pa., SP—Same, CTY—Westmoreland; RR—P.R.R., Turtle Creek Valley.
PR—W. B. Skelly.....Export, Pa.
TR—James C. Gray..Pittsburgh, Pa.
GM—W. B. Skelly.....Export, Pa.
PA—W. B. Skelly, " "
GS—W. B. Skelly,
MS—Geo. M. Fink.....Export, Pa.
EM—Harrop, Hopkins & Taylor, Pittsburgh, Pa.
S of H—3 Elec. loco., track gauge 40 in.
S of M—Hand, and 3 Elec. machines.
PP—3 Titusville return tubular boilers, total 450 H. P., 2 gen. units 500 volts D. C.
EMP—99. Last fiscal year output 89,000 tons.

SMITH, ROBERT, COAL CO.
Kokomo Mine; Drift, "E" Seam, 48 in. thick.
PO—Lilly, Pa.; SP—Same CTY—Cambria; RR—P. R. R.
PR—Robert Smith.....Lilly, Pa
TR—Robert Smith, " "
GM—Robert Smith, " "
PA—Robert Smith, " "
MS—E. A. McConville....Cresson, Pa.
EM—D. W. Sillyman....Altoona, Pa.
S of H—Steam loco; track gauge 36 in.
S of M—Hand.
EMP—29. Last fiscal year output 24,000 tons.

SMITHFIELD COAL & COKE CO
Burchinal Mine, Drift, Pgh. Seam, 6 to 7 ft. thick.
PO—Smithfield, Pa. SP—Same. CTY—Fayette. RR—B. & O.
PR—C. E. Wilson, Dunbar, Pa.
TR—R. S. Burchinal, Smithfield, Pa.
GM—R. S. Burchinal, " "
GS—R. S. Burchinal, " "
PA—R. S. Burchinal, " "
CE—Homer Burchinal, Uniontown, Pa.
MM—Samuel Tobin, Out Crop, Pa.
SCO—R. S. Burchinal, Smithfield, Pa. Buyer, W. J. Burchinal.
S of H—Mules. Track gauge 44 in.
S of M—Hand.
PP—2 Water Tube Boilers, total 90 H.P.
EMP—40. Last fiscal year output 24,000 tons. Coke Ovens—34 Bee Hive.

SMOKELESS COAL CO.
Smokeless Mines Nos. 1, 2 and 3;
MS—Chas. Owens.....Johnstown, Pa.
No report.

SNOWDEN COKE CO.
PO—Uniontown, Pa.
Taken over plant of Mount Hope Coke Co. No report.

SOISSON, JOS. FIRE BRICK CO.
General Office, Connellsville, Pa.
Indiana No. 1 Mine, Drift, "B" Seam, 18 to 42 in thick.
PO—Bolivar, Pa.; SP—Same; CTY—Westmoreland; RR—P.R.R., West Penn Dit.
PR—Jos. Soisson ....Connellsville, Pa.
TR—W. F. Soisson, " "
GM—W. F Soisson, " "
PA—F. W. Neuroth, " "
EM—R. R. Soissou.....Boliver, Pa.
MS—R. R. Soisson, " "
SM—E. R. Hammond, " "
S of H—Mules: track gauge 37 in.
S of M—Hand.
PP—5Boilers total 600 H. P., 3 pumps.

SOMERSET & CAMBRIA COAL CO.
Now Grazier Coal Mining Co.

SOMERSET MINING CO
Knickerbocker No. 1. Drift, B Seam, 3½ to 5 ft. thick.
PO—Hooversville, Pa. SP—Same. CTY—Somerset. RR—B. & O., Rockwood Branch.
PR—F. M. Graff,... Blairsville, Pa.
TR—W. P. Graff, " "
GM—Telford Lewis, Hooversville, Pa.
PA—Telford Lewis, " "
EM—R. A. Suppes, " "
MM—W. E. Nevling, " "
EE—W. E. Nevling, " "
SCO—Hooversville Supply Co, Hooversville, Pa.
SM—C. L. Stewart, Hooversville, Pa.
S of H—3 Elec. loco., track gauge 36 in.
S of M—2 Elec. machines and hand
PP—2 boilers, total 300 H.P., 250 volts D.C.
EMP—190. Last fiscal year output 232,466 tons. Sales Agents Knickerbocker Fuel Co., New York.

SOMERSET-QUEMAHONING SMOKELESS COAL CO.
Liston Mine; Drift; C Prime Seam, 40 to 54 in. thick.
PO—Listonburg, Pa.; SP—Same; STY—Somerset; RR—B. & O., White's Creek Branch.
PR—John P. Harrington, Listonb'g, Pa.
GS—John P. Harrington, " "
TR—James H. Saulsbery, " "
GM—James H. Saulsbery, " "
PA—James H. Saulsbery, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
Sales Agency, Tri-State Coal & Coke Co., Pittsburgh, Pa.

SOMERSET SMOKELESS COAL CO . . . .
See Merchants Coal Co.

SONMAN SHAFT COAL CO.
General Office, Minersville, Pa.
Sonman Mine; Slope; "E" or Lemon Seam, 42 to 50 in. thick.
PO—Sonman, Pa.; SP—Portage, Pa.; CTY—Cambria; RR—P. R. R., Sonman Br.
PR—Jas. B. Neale.....Minersville, Pa.
GM—Jas. B. Neale, " "
VP—Vance C. McCormick, " "
Secy—Jas. H. Collier, " "
TR—S. B. Thorne.....New York, N. Y.
PA—Jas. Strachan.....Sonman, Pa.
MS—Jas. Strachan, " "
MM—W. C. Cooper, " "
EE—R. B. Clayton, " "
EM—J. S. Sillyman.....Altoona, Pa.
S of H—Rope, mules, Elec. hoist and Elec. loco.; track gauge 42 in.
S of M—Hand and 8 Elec. mach.
PP—6 boilers, total 825 H. P., 250 volts D. C., 1 pump.
EMP—150. Last fiscal year output 95,703 tons.

SORGE BROS.
Sorge Mine.
PO—Homestead, Pa. R. F. D. No. 1. CTY—Allegheny.

SOUTH FAYETTE COAL CO.
Melrose Mine; Slope; Pgh. Seam, 5 1-2 to 6 1-2 ft. thick.
PO—Bridgeville, Pa.; SP—Same; CTY—Allegheny; RR—P. C. C. & ST. L., Chartiers Branch.
PR—E. R. Weise,....Bridgeville, Pa.
GM—E. R. Weise, " "
GS—E. R. Weise, " "
TR—Frank E. Weise....Glenshaw, Pa.
CE—Randolph & Means, Pittsburgh, Pa.
EM—Andrews & Southard, " "
SCO—Harmuth Bros.....Bridgeville, Pa.
S of H—Rope; track gauge 42 in.
S of M—3 Elec mach.
PP—Power purchased, 1 pump.

SOUTH FAYETTE COKE CO
General Office, ... Uniontown, Pa.
PR—J. W. Abraham, " "
TR—J. W. Semans, " "
GM—J. W. Abraham, " "
GS—J. W. Abraham, " "
PA—J. W. Abraham " "
EM—F. G. Christopher, " "
SCO—Fretts Supply Co., " "
Buyer, Alfred Franks, Messmore, Pa. Sales Agents, Producers Coke Co, Uniontown, Pa.

Fretts Mine, Slope, Pittsburgh Seam, 9 ft. thick.
PO—Messmore, Pa. SP—Same. CTY—Fayette. RR—P. R. R.
MS—F. G. Christopher Uniontown, Pa.
S of H—Rope; track gauge 42 in.
S of M—Hand.
PP—1 boiler, 150 H.P.
EMP—73. Last fiscal year output 44,700 tons. 80 Bee Hive coke ovens.

Shirey Mine, Drift, Pittsburgh Seam, 9 ft. thick.
PO—Baggaley, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—W. I. Jenkins, Baggaley, Pa.
S of H—Elec. Track gauge 42 in.
S of M—Hand.
PP—Buy power.
EMP—39. Last fiscal year output 12,173 tons. 36 Bee Hive coke ovens.

Emery Mine, Drift, Pittsburgh seam, 9 ft. thick.
PO—Leckrone, Pa. SP—Same. CTY—Fayette. RR—B. & O.
MS—S. J. Sterling, Leckrone, Pa.
S of H—Mules, track gauge 42 in.
S of M—Hand.
EMP—17. Last fiscal year output, 8,928 tons. 32 Bee Hive coke ovens.

SOUTH FORK COAL MINING CO.
General Office, 421 Chestnut St., Philadelphia, Pa.
South Fork, No. 2 Mine; Slope.
PO—South Fork, Pa.; SP—Same CTY—Cambria; RR—P. R. R.
PR—J. S. W. Holton,..Philadelphia, Pa.
TR—M. L. Preston, " "
PA—Address the General Office.
CE—Fetterman Engineering Co., Johnstown, Pa.
MS—Patrick Quinn....South Fork, Pa.
S of H—Rope and mules.
S of M—Hand and mach.
PP—3 Boilers total 375 H. P., 1 comp. and 1 pump.
EMP—180.

SOUTH LIGONIER COAL CO.
No. 1 Mine, Drift, Pgh. Seam 7 to 8 ft. thick
PO—Ligonier, Pa.; SP—Same: CTY—Westmoreland; RR—Ligonier Val.
TR—Geo. W. Deeds....Ligonier, Pa.
PA—Geo. W. Deeds, " "
GM—W. H. Lowry, " "
MS—W. H. Lowry, " "
EM—W. H. Matthews " "
S of H—Mules and gravity; track gauge 40 in.
EMP—45.
Sales Agent, H. A. Tomkins, Portage, Pa.

SOUTHERN CONNELLSVILLE COKE CO
General Office, Uniontown, Pa.
Marion Mine, Drift, Pgh. Seam, 5 to 8 ft. thick.
PO—Cheat Haven, Pa. SP—Same CTY—Fayette. RR—B. & O.
PR—F. E. Markell,.. Uniontown Pa.
TR—J. R. Davidson, " "
GM—S. A. Carson, " "
PA—S. A. Carson, " "
GS—S. A. Carson, " "
EM—E. C. Baker Co., " "
MS—Andrew Laing, Cheat Haven, Pa.
SCO—Cheat Haven Supply Co. Buyer, T. M. Bowman, Cheat Haven, Pa.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—92. 64 Bee Hive Coke Ovens. Last fiscal year output, 75,000 tons. Sales Agent, S. A. Carson, Uniontown, Pa.

SPRINGFIELD COAL MINING CO.
Nos. 1, 2 and 3 Mines; Slopes and Drift; B Seam, 42 to 48 in. thick.
PO—Nanty-Glo, Pa. SP—Same; CTY—Cambria; RR—P. R. R., Indiana Br.
PR—H. A. Tompkins....Nanty-Glo, Pa.
TR—Enoch Bellis, " "
GM—Enoch Bellis, " "
PA—Enoch Bellis, " "
GS—Enoch Bellis, " "
MS—Jas. Caldwell, " "
CE—Wm. Weary, " "
MM—Wm. Schrode, " "
SM—Jos. Griffith, " "
S of H—5 Elec., 1 steam loco; track gauge 42 in.
S of M—1 Elec. mach. comp. air and hand.
PP—5 Return tubular boilers, total 690 H. P., 1 motor set 200 K. W., 3 compressors, 5 pumps.
EMP—400. Last fiscal year output 248,000 tons.

STAGE, G G & SON,
Now Grove Coal Co.

STANDARD COAL CO.
General Office, Altoona, Pa.
Standard Mine; Drift; B Seam;
PO—Lilly, Pa.; SP—Same; CTY—Cambria RR—P. R. R., Lilly Br.
PR—P. N. Rich.....Altoona, Pa.
GM—P. N. Rich, " "
CE—P. N. Rich, " "
TR—Samuel Wilson, " "
MS—Charles McGill.....Lilly, Pa.
EM—Charles McGill, " "
S of H—Mules.
S of M—Hand.
PP—1 boiler, 30 H. P.
EMP—35. Last fiscal year output 26,000 tons. Sales Agent, P. M. Rich, Altoona, Pa.

STANDARD COAL MINING CO
General Office, Grove City, Pa.
Standard Mine, Drift Mine, Brookville Seam, 78 in. thick.
PO—Argentine, Pa. SP—Argentine, Pa. CTY — Butler RR — Bessemer Hilliard Branch.
TR—Harry Hamilton, Grove City, Pa.
GM—Harry Hamilton, " "
PA—Harry Hamilton, " "
GS—John C. Hamilton, Argentine, Pa.
S of H—Elec. loco.; track gauge 37 in.
S of M—Elec. mach.
EMP—100.

STANDARD MOSHANON COAL CO.
General Office, Williamsport, Pa.
Standard No. 4; Drift; "D" Seam.
PO—Smoke Run, Pa.; SP—Same; CTY—Clearfield; RR—P. R. R
PR—G. W. H. H. Miller..Saltsburg, Pa.
GM—G. W. H. H. Miller, " "
TR—W. H. Spencer..Williamsport, Pa.
MS—R. D. Lamb.....Smoke Run, Pa.
S of H—Mules.
S of M—Hand.
EMP—150.

STANDARD-QUEMAHONING COAL CO.
Nos. 1 and 2; Drift; Miller and "C" Prime Seams; 3 ft. 2 in. to 3 ft. 9 in. thick.
PO—Boswell, Pa. SP—Same; CTY—Somerset; RR—B. & O., Quemahoning Branch.
PR—Gustus Volk.....Boswell, Pa.
TR—F. Freese, " "
GM—Frank D. Allen, " "
GS—Frank D. Allen, " "
PA—Frank D. Allen, " "
MS—Chas. Awtey, " "
S of H—Rope and mules; track gauge 42 in.
S of M—Hand.
PP—Boiler, 1 gen. unit.

STAR COAL CO
General Office, Pittsburgh, Pa.
Star Mine, Drift. Pgh. Seam, 4½ ft. thick.
PO—Courtney, Pa. SP—Same. CTY—Washington, Pa. RR—P. R. R., Monon. Dit.
PR—H. W. Croft,. Pittsburgh, Pa.
GM—H. W. Croft, " "
TR—Wm. Walker, " "
PA—C. T. Stewart, " "
GS—Nin McQuilken, Clearfield, Pa.
MS—John C. Roe, Courtney, Pa.
S of H—1 Elec. mach. and endless rope. Track gauge 36 in.
S of M—7 Elec. Mach.
PP—2 Return tubular boilers, total 200 H.P. 1 gen. unit 250 volts D.C. 2 pumps.
EMP—120
Sales Agency, J. H. Hillman & Son Co., Pittsburgh, Pa.

STATE LINE COAL CO
State Line Mine, Drift, No. 6 and 7 Seams, 3 to 4½ ft. thick.
PO—E. Palestine, Ohio. SP—Same CTY—Columbiana. RR—P. & W. & C.
PR—James Mullins.
TR—C. A. McDonals.
PA—F. P. Mullins.
MS—H. Laughlin, East Palestine, O.
S of H—Mules and rope. Track gauge 39 in.
S of M—Hand.
EMP—200. Last fiscal year output, 150,000 tons.

STAUFFER-QUEMAHONING COAL CO.
Stauffer Nos. 1, 2, and 3 Mines; Slope and Drift; U. Kittanning and U. & L. Freeport Seams, 36 to 60 in. thick.
PO—Listie, Pa.; SP—Same and Wells Creek, Pa.; CTY—Somerset; RR—B. & O., S. & C. Br.
PR—J. M. Stauffer.....Scottdale, Pa.
TR—E. J. Norton.....Connellsville, Pa.
GM—W. V. Whiteman,.. Listie, Pa.
GS—W. V. Whiteman, " "
EM—W. V. Whiteman, " "
PA—J. W. Simpson, " "
EE—H. G. Fink, " "
SCO—Wells Creek Supply Co. Buyer, Horace Arden, Listie Pa.
S of H—4 Elec. loco., rope and mules; track gauge 40 in.
S of M—Hand, 1 Elec. and 2 Comp. air mach.
PP—6 Return tubular boilers total 550 H. P., 2 gen. units 550 volts D. C., 1 compressor, 2 pumps.
EMP—380. Last fiscal year output 220,000 tons.

STEEN, W. J., MINING CO.
Willa No. 1, Drift, Pgh. Seam, 4 ft. 8 in. to 5 ft. thick.
PO—Woodville, Pa.; SP—Presto; CTY—Alegheny; RR—P. C. & Y.
GM—W. J. Steen....Woodville, Pa.
MS—Thos. Cox.....Bridgeville, Pa.
EM—Pgh. Coal Co.....Pgh., Pa.
EE—James Cain, Bridgeville, R.F.D.
S of H—Mules and 1 elec. loco.; track gauge 42 in.
S of M—Hand and 3 elec. mach.
PP—Power purchased.
Sales Agent, Pgh. Coal Co., Pgh., Pa.

STERLING COAL CO.
General Office, 421 Chestnut St., Philadelphia, Pa.
Sterling Nos. 1, 3, 5, and 6 Mines; Drift; B or Miller Seam.
PO—Elmora, Pa. SP—Bakerton, Pa. CTY—Cambria. RR—P. R. R.
PR—J.S.W.Holton, Philadelphia, Pa.
PA—F. S. Claypoole, " "
TR—DeVeaux Powel, 29 Broadway, N.Y.
GS—Patrick Quinn, ..South Fork, Pa.
S of H—Elec. loco.
S of M—Mach.
PP—11 boilers, total 1500 H. P., 250
EMP—800.

STEWART IRON CO., LTD.
General Office, Sharon, Pa.
Stewart Mine, Slope, Pittsburgh Seam.
PO—Uniontown, Pa. SP—Evans Station, Pa. CTY—Fayette. RR—B. & O.
GM—Samuel McClure, .. Sharon, Pa.
PA—Thos. W. Keighley, Uniontown "
MS—Thos Keighley, " "
EM—G. W. Nichols, ... Sharon, "
S of H—Rope.
S of M—Hand.
PP—4 boilers, total 600 H. P.
EMP—150.

STEWART COAL CO.
GM—W. B. Warren, ... Knoxdale, Pa.
TR—W. S. Reid, " "
GM—W. S. Reid " "
PA—Y. N. Stewart, " "
EM—A. L. Burton, Du Bois, Pa.
MM—Wm. B. Hayes.
Sales Agency, Shawmut Coal & Coke Co., Buffalo, N. Y.

Stewart Nos. 2 and 3 Mines. L. Freeport Seam, 6 to 4½ ft. thick.
Continued on Next Page.

STEWART COAL CO.—Continued.
PO—Knoxdale, Pa. SP—Same. CTY—Jefferson. RR—P. S. N. R. R. Co.
S of H—Mules. Track gauge 36 in.
S of M—3 Comp. air mach.
PP—1 Return tubular boilers, 150 H. P., 1 compressor and 3 pumps.
EMP—90. Last fiscal year output, 169,000 tons.

Timblin No. 1 Mine; Drift; Up Freeport Seam, 4 to 5 ft. thick.
PO—Timblin, Pa.; SP—Same; CTY—Jefferson; RR—P. S. N.
S of H—1 Elec. loco.; track gauge 36 in.
S of M—Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., gen. unit 150 volts D. C. H.P.; gen. unit 250 volts D.C.
Last fiscal year output 21,000 tons.

STINEMAN COAL & COKE CO.
General Office, 421 Chestnut Street, Philadelphia, Pa
PR—Robt. B. Baker, New York N. Y.
TR—James H. Atkinson, Philadelphia, Pa.
GM—W. I. Stineman, South Fork, Pa.
PA—W. I. Stineman, South Fork, Pa.
EM—S. G. Fetterman, Altoona, Pa.
MM—A. Crane, South Fork, Pa.
EE—John Penrod, South Fork, Pa.

Stineman No. 2 Mine, Drift, "B" Seam, 4 ft. thick.
PO—South Fork, Pa. SP—Same. CTY—Cambria. RR—P. R. R., Main Line.
S of H—3 Elec. Mach. Track gauge 2 ft 6 in.
S of M—Hand.
PP—1 Return tubular boiler, 150 H. P. Gen. units 500 volts, D. C. 3 pumps.
EMP—233. Last fiscal year output, 187,834.

Stineman No. 4 Mine, Slope, "B" Seam, 4 ft. thick.
PO—South Fork, Pa. SP—Same. CTY—Cambria. RR—P. R. R., Main Line.
MS—J. B. Dunmire...South Fork, Pa.
S of H—Rope, Track gauge 2½ ft.
S of M—Hand.
PP—4 Return tubular boilers, total 600 H.P.
EMP—152. Last fiscal year output, 117,118.

STEWARTON COAL CO.
Stickel Mine; Drift, L. Kittanning Seam, 60 in. thick.
PO—Connellsville, Pa.; SP—Stewarton, Pa.; CTY—Fayette; RR—B. & O.
PR—A. C. Stickel....Connellsville, Pa.
PA—A. C. Stickel, " "
TR—M. A. McKevitt, " "
GM—Leandor Cox, " "
GS—Leandor Cox, " "
MS—John Cox.....Mill Run, Pa.
S of H—Mules.
EMP—15. Sales Agency Evans Coal & Coke Co., Connellsville, Pa.
New operation. Capacity 100 tons per day.

STINEMAN COAL MINING CO.
General Office, Penna. Bld'g., Philadelphia, Pa.
Stineman No. 1 Mine, Drift, "B" Seam, 4 ft. thick.
PO—South Fork, Pa. SP—Same CTY—Cambria. RR—P. R. R., Main Line.
PR—James S. Whiteley, Baltimore, Md.
TR—Leon Walker, Wilmington, Del.
GM—W. I. Stineman, South Fork, Pa.
PA—W. I. Stineman, " " "
MM—W. W. Dunmire, " " "
MS—Harry Fessler, " " "
EM—S. G. Fetterman, Altoona, Pa.
SCO—Stineman Bros. Supply Co., buyer, Lewis Yost, South Fork, Pa.
S of H—5 elec. loco. Track gauge 2 ft. 6 in.
S of M—Hand.
PP—4 Return tubular boilers, total 600 H.P Gen. units 500 volts A. C.
EMP—280. Last year's fiscal output, 232,552.

STINEMAN, H. C.
Stineman No. 5, Drift, C Prime Seam, 3½ to 4 ft. thick.
PO—South Fork, Pa. SP—Same. CTY—Cambria.
PR—H. C. Stineman, South Fork, Pa.
GM—H. C. Stineman, " " "
GS—H. C. Stineman, " " "
PA—H. C. Stineman, " " "
MS—Wm. Roberts, " " "
EM—S. G. Fetterman, Johnstown, Pa
S of H—Mules, Rope and gravity.
S of M—Hand.
EMP—80. Last fiscal year output, 25,000 tons.

STONER COAL CO.
Stoner Nos. 1 and 2 Mines; Drifts; Price Seam, 48 in. thick.
PO—Berlin, Pa. SP—Same. CTY—Somerset. RR—B. & O., Berlin Branch.
TR—H. K. Stoner,..... Berlin, Pa.
PA—H. K. Stoner, " "
MS—C. J. Baker, " "
S of H—Mules. Track gauge, 40 in.
S of M—Hand.

STOTT, JAMES F.
Red Jacket Nos. 1, 2 and Coaldale, Mines, Drift.
PO—Philipsburg, Pa. SP—Same. CTY—Center. RR—N. Y. C.
GM—James Stott, .. Philipsburg, Pa.
PA—James Stott, "
MS—E. M. Moore and F. Greaves, " "
S of H—Mules.
S of M—Hand.
EMP—(1 and 2) 50.

STRANGFORD COAL COMPANY.
Strangford Mine, Drift; "E" or Up. Freeport Seam; 3 ft. 6 in. thick.
PO—Blairsville, Pa.; SP—Strangford, Pa.; CTY—Indiana; RR—P.R.R., Conemaugh, Div.
TR—W. P. Graff.....Blairsville, Pa.
GM—F. M. Graff, " "
PA—F. M. Graff, " "
MS—Ernest Fletcher....Saltsburg, Pa.
SM—R. J. Bomblatus, R.F.D. No. 4, Blairsville, Pa.
CE—Albert Smith.....Saltsburg, Pa
EM—Albert Smith.....Saltsburg, Pa.
MM—Chancey Shipley, "
SCO—Kiskiminetas Supply Co., Blairsville, Pa., Buyer, Wm. G. Fletcher, Blairsville, Pa.
S of H—Tail rope, mules and comp. air loco., track gauge 36 in.
S of M—Hand and 15 comp. air mach.
PP—2 Erie City return tubular boilers total 300 H. P., 1 engine; 2 air comp., 3 pumps.
EMP—111. Last fiscal year output 66,604 tons.
Sales Agent, Knickerbocker Fuel Co., New York, N. Y.

STRUTHERS COAL & COKE CO.
General Office, Cleveland, Ohio.
Struthers Mine, Shaft, Pittsburgh Seam, 6 to 9 ft. thick.
PO—Fairbank, Pa. SP—New Salem, Pa. CTY—Fayette. RR—Monongahela R. R. Co.
PR—Walter C. Runyon, New York, N. Y.
TR—A. Grossman.....Cleveland, O.
PA—F. W. Ream, " "
CE—W. E. Fohl, Pittsburgh, Pa.
EM—Fayette Eng. Co., Uniontown, Pa.
MS—John Shultz, Fairbank, Pa.
MM—Rud, McKrantz Fairbank, Pa.
SCO—New Salem Supply Co., Fairbank, Pa. T. R. Lynch buyer.
S of H—Horses and 3 compressed air loco. Track gauge 42 inches.
S of M—Hand.
PP—4 B. & W. return tubular boilers, total 700 H.P. 2 Gen. units 250 volts D.C. 2 Air Compressors and 1 Pump.
EMP—220. Coke ovens, 200 Bee Hive. Last fiscal year output 185,034 tons.

STYER COAL CO.
General Office, Philadelphia, Pa.
Radnor Mine; Drift; Miller Seam, 3 to 4½ ft. thick.
PO—Mineral Point, Pa.; SP—Same; CTY—Cambria; RR—P.R.R.
PR—Samuel Styer ..... Phila., Pa.
MS—James Houston..Mineral Point, Pa.
S of H—Mules.
S of M—Hand.
EMP—10. Last fiscal year output 12000 tons.

SUGAR RUN COAL MINING CO.
General Office, Altoona, Pa.
Sugar Run Mine No. 1; Drift; "D" Seam, 36 to 42 in. thick.
PO—Tunnel Hill, Pa. SP—Gallitzin. CTY—Blair. RR—P. R. R., New Portage Branch.
PR—B. F. McCartney.....Altoona, Pa.
GM—B. F. McCartney, " "
GS—B. F. McCartney, " "
PA—B. F. McCartney, " "
TR—H. E. Clark, " "
MS—Jas. McCoy, Tunnel Hill, Pa.
EM—Cambria Steel Co., Johnstown, Pa.
S of H—Mules. Track gauge, 36 in.
S of M—Hand.
EMP—52. Last fiscal year output 30,-211 tons.

SUMMIT COAL MINING CO.
General Office, Punxsutawney, Pa.
Summit, Dayton Nos. 1 and 2 Mines, Slopes, Up. Freeport Seam.
PO—Dayton, Pa. SP—Same. CTY—Armstrong. RR—B. R. & P.
PR—S. A. Rinn, Punxsutawney, Pa.
GM—S. A. Rinn, " "
TR—E. H. Winslow, " "
PA—E. H. Winslow, " "
GS—W. N. Trussell, " "
CE—H. M. Kanarr, " "
MM—E. C. Jenkin, ... Dayton, " "
MS—S. C. McHenry, " "
S of H—3 Elec. locos. and rope. Track gauge 42 in.
S of M—3 elec. and 5 comp. air machines.
PP—8 water tube boilers, total 800 H. P., 6 units, 250 volts D. C., 3 compressors and 7 pumps.
EMP—200. Last fiscal year output 150,000 tons.

SUNNYSIDE COAL CO.
Sunnyside Nos. 1 and 3 Mines; Kittanning and Upper Freeport Seams, 42 in. thick.
PO—Johnstown, Pa. SP—Same. CTY—Cambria. RR—Johnstown & Stony Creek R. R., delivering to B. & O., P. R. R.
PR—Howard E. Miller, Johnstown, Pa.
TR—George W. Reese, " "
GM—Chas. S. Ling, " "
PA—Chas. S. Ling, " "
MS—Griffith Powell, " "
EM—Fetterman Engineering Co., Johnstown, Pa.
S of H—1 Elec. loco., gravity and mules; track gauge 36 in.
S of M—1 elec. mach. and hand.
PP—1 gen. unit 300 volts D. C. Purchase power.
EMP—233. Last fiscal year output 69,377 tons.

SUNSHINE COAL & COKE CO.
Out of business. Various mines sold to different companies.

SUPERIOR COAL CO.
Superior D Mine; Drift; "B" Seam; 4 ft. thick.
PO—Lochvale, Pa.; SP—Glen Campbell, Pa.; CTY—Indiana; RR—P.R.R., P. & N. W.
PR—Franklin H. Skeele, 90 West St., New York.
TR—J. O. Clark...Glen Campbell, Pa.
GS—J. H. Miller, " "
PA—J. H. Miller, " "
MS—Henry Ball.....Lochvale, Pa.
SCO—Lochvale Supply Co., Buyer, W. S. Martz, Glen Campbell, Pa.
S of H—Mules, track gauge 42 in.
S of M—Hand and 2 elec. mach.
PP—1 pump; power purchased.
EMP—100. Sales agent, Clark Bros. Coal Mng. Co. and Skeele Coal Co.

SUPERIOR FUEL CO.
General Office, Greensburg, Pa.
Shaft Mine, E or Up. Freeport Seam.
PO—Russellton, Pa.; SP—Same; CTY—Allegheny; RR—B. & L. E.
PA—A. N. Pershing.....Greensburg, Pa
EM—Robert Morris, "
GS—L. B. Lewis.....Rimersburg, Pa.
MS—G. A. Hoerr.....Russellton, Pa.
SCO—Russellton Store Co., Russellton, Pa.
S of H—Mules.
S of M—17 Comp. air mach.
EMP—218. Last fiscal year output 109,600 tons.

SUPPES COAL COMPANY.
Suppes Mine, Drift, C. Prime or Cement Seam, 3 ft. thick.
PO—Johnstown, Pa. SP—Same. CTY—Cambria.
PR—C. H. Suppes, Jr., Johnstown, Pa.
GS—C. H. Suppes, Jr.....Johnstown, Pa.
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—Buy Power.
EMP—50. Last fiscal year output, 30,-000 tons.

SUTTER COAL CO.
Valier Mines Nos. 1 and 2, Drifts. Lower Freeport Seam, 3 to 4 ft. thick.
PO—Valier, Pa. SP—Same. CTY—Jefferson. RR—B. R. & P.
PR—A. P. Sutter, ... Valier, Pa.
TR—E. H. Winslow..Punxsutawney, Pa.
GM—E. H. Winslow, " "
PA—E. H. Winslow, " "
MS—Nick Barnott....Punxsutawney, Pa.
SCO—Valier Supply Co. Buyer, A. P. Sutter.
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand and 3 comp. air machines.
PP—2 Water tube boilers, total 150 H.P. 1 Air Compressor and 2 pumps.
EMP—50. Last fiscal year output, 50,-000 tons.

SWOOPE, H B & CO
Sylvania, Morgan Run, King and No. 18 Mine; Slope; "B" and "D", Seams 42 to 60 in. thick.
PO—Madera, Pa. SP—Same. CTY—Clearfield; RR—P. R. R., Tyrone Div. Y. C. & H. R. R. R.
PR—H. B. Swoope, ... Madera, Pa.
PA—H. B. Swoope, " "
MS—John Stevenson, " "
EM—S. R. Moore, " "
SCO—Madera Trading Co., Buyer, G. B. Curry, Madera Pa.
S of H—Mules, 2 Gasoline and 1 Elec. loco.; track gauge 37 in.
S of M—Hand, 6 Elec. and 30 Comp. air mach.
PP—4 Dubois and Keeler Water tube boilers, total 600 H.P. 2 compressors, 5 pumps. Purchase power.
EMP—281. Last fiscal year output 248,566 tons.

TARENTUM COAL & STONE CO.
No. 1 Mine; Drift, L. Freeport Seam, 39 in. thick.
PO—Tarentum, Pa.; SP—Same; CTY—Allegheny; RR—P. R. R., W. Penn Br.
PR—McKinstrey Griffith, Tarentum, Pa.
TR—J. M. Griffith, " "
GM—J. M. Griffith, " "
PA—J. M. Griffith, " "
S of H—Mules; track gauge 34 in.
S of M—1 Elec. and 2 comp. air mach.
PP—Power purchased.
EMP—11. Last fiscal year output 7,500 tons.

TAYLOR COAL & COKE CO.
General Office, Cleveland, O.
Searight, Shaft, Pittsburgh Seam.
PO—Uniontown, Pa. SP—Low Phos. CTY—Fayette. RR—Monon.
PA—D. B. Stauft, .. Uniontown, Pa.
GS—D. B. Stauft, "
MS—J. J. McIntyre, " "
SM—H. H. Anawalt, " "
EE—J. A. McMillen, " "
S of H—Rope and 2 elec. locos.
S of M—Hand.
PP—8 boilers, total 1,200 H. P., gen unit, 250 volts D. C. Coke ovens, 378.

TAYLOR, McCOY COAL & COKE CO.
General Office, Baltimore, Md.
Gallitzin Mine; Shaft; "E" Seam, 48 to 52 in. thick.
PO—Gallitzin, Pa.; SP—Same; CTY—Cambria; RR—P. R. R.
PR—C. J. Taylor, ...Baltimore, Md.
TR—C. G. Osborne, " "
GM—F. J. Taylor, " "
GS—F. D. McNellis, ..Gallitzin, Pa.
PA—F. D. McNellis, " "
MS—F. D. McNellis, " "
MM—Henry Fisher, " "
EE—Henry Fisher, " "
SCO—Address the Co., " "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—6 Elec. mach.
PP—6 Return tubular boilers, total 800 H.P., 2 gen. units 250 volts D.C., 1 pump.
EMP—275. Coke ovens—212 Bee Hive.
Last fiscal year output 135,476 tons.

TAYLOR & McDONELL.
Quality No. 1 Mine. CTY—Somerset; RR—B. & O.
GS—R. A. McDonell.....Berlin, Pa.
No report.

THOMAS, IVOR, COAL CO.
Delphin Mine; Drift; "B" Seam; 33 in. thick.
PO—Boswell, Pa.; SP—Same; CTY—Somerset; RR—B. & O., Quemahoning Br.
PR—Ivor Thomas.....Boswell, Pa.
GM—Ivor Thomas, " "
PA—Ivor Thomas, " "
MS—Mike Harding, " "
EM—Chas. Hurd, " "
S of H—Mules.
S of M—Hand.
EMP—9. 5-25-15. Started shipping coal Sept., 1914.

TEN MILE COKE CO.
General Office, Uniontown, Pa.
Bosco Mine; Slope; 78 to 84 in. thick.
PO—Millsboro, Pa.; SP—Bosco, Pa.; CTY—Washington; RR—P. R. R.
PR—I. W. Semans.....Uniontown, Pa.
TR—E. T. Semans, " "
S of H—Mules and rope.
Coke Ovens, 257 Bee Hive.
Formerly owned by the Bessemer Coke Co.
Not operating June 30, 1915.

THOMPSON-CONNELLSVILLE COKE CO
Thompson No. 1 and 2, Shafts; Pgh. Seam, 6 to 9 ft. thick.
PO—New Salem, Pa. SP—Republic, Pa. CTY—Fayette. RR—P. R. R. Monon. Div.
PR—J. P. Brennan, .. Pittsburgh, Pa.
GM—J. P. Brennan, " "
PA—W. G. Rock " " "
TR—A. A. Thompson, New Salem, Pa.
GS—A. A. Thompson, " " "

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MS—John Harding, Republic, Pa.
CE—J. M. Rayburn, Pittsburg, Pa.
MM—Harry Murray, New Salem. Pa.
SCO—Lilly Run Supply Co. Buyer, E. J. Seeman, Republic, Pa.
S of H—10 comp. air loco. Track gauge 42 in.
S of M—Hand and comp. air.
PP—18 Return tubular Erie & Penna. boilers, total 2,700 H.P. 4 gen. units 250 volts D.C., 3 air compressors and 1 pump.
EMP—No. 1, 330; 2, 208. Coke ovens, 800 Bee Hive. Last fiscal year output. No. 1, 435,002; No. 2, 259,790 tons.
Sales Agency, Producers Supply Co., Uniontown, Pa.

THOMPSON RUN COAL CO.
Out of business.

THROPP, JOSEPH E.
General Office, Everett, Pa.
GM—D. S. Thropp.....Everett, Pa.
PA—D. S. Thropp, " "
GS—G. W. Hughes, " "
MM—Chas. Felton, " "
EE—Chas. Felton, " "
EM—P. E. Womelsdorf, Philipsburg, Pa.
SCO—Kearney Supply Co., Kearney, Pa.; Minersville Supply Co., Minersville, Pa.; Earlston Supply Store, Everett, Pa.

Kearney Barnett and Kearney Slope and Plane Mines; Seam 24 to 60 in. thick.
PO—Kearney, Pa.; SP—Same; CTY—Bedford; RR—H. & B. T.
MS—R. H. Kay.....Saxton, Pa.
S of H—Mules, rope, gravity, comp. air and steam loco.; track gauge 36 in.
S of M—Hand.
PP—3 Erie City return tubular boilers, total 350 H. P., 1 air comp. and 2 pumps.
EMP—180. Coke Ovens, 170 Bee Hive. Last fiscal year output, 47,283 tons.

Gordon Mine; Slope and Drift; Seam 30 to 60 in. thick.
PO—Dudley, Pa.; SP—Same; CTY—Same; RR—H. & B. T.
MS—R. H. Kay.....Saxton, Pa.
S of H—Mules, rope, gravity, comp. air, elec. and steam loco.
S of M—Hand.
PP—2 Return tubular boilers, 1 gen. unit, 250 volts, D. C.; Elec. and steam pumps. Purchase power.
EMP—175. Coke Ovens, 90 Bee Hive. Last fiscal year output 114,000 tons.

TROUT RUN COAL MINING CO.
Porage No. 5 Mine. CTY—Cambria; RR—P. R. R.
GS—A. M. Dunsmore..St. Benedict, Pa.
MS—J. W. Haddick.....Porage, Pa.
No report.

TIDE COAL MINING CO.
General Office, Indiana, Pa.
Tide Nos. 1 and 2 Mines; Drift; "B" Seam, 45 in. thick.
PO—Lucerne, Pa.; SP—Tidedale, Pa.; CTY—Indiana; RR—B. R. & P.
PR—J. M. Guthrie, ...Indiana, Pa.
GM—F. M. Fritchman, " "
PA—F. M. Fritchman, " "
CE—G. W. Brymer, " "
MS—W. S. Blyth, ...Homer City, Pa.
EM—George Rodgers, " "
EE—Harry Rouch, ...Lucerne, Pa.
SCO—Mahoning Supply Co., " "
S of H—3 Elec. loco.; track gauge 42 in.
S of M—4 Elec. mach.
PP—1 Pump; power purchased.
EMP—172.
Sales Agency, R. P. Coal & Iron Co., Rochester, N.Y.

TIMBLIN COAL CO.
Timblin Mine; Drift; Freeport Seam, 36 to 55 in. thick.
PO—Knoxdale, Pa.; SP—Timblin, Pa.; CTY—Jefferson; RR—P. S.
PR—Joseph Knable, ...Knoxdale, Pa.
TR—Joseph Hopkins, " "
S of H—Mules.
S of M—Hand.
EMP—8. Output for six months, 5,000 tons.

TOBY COAL MINING CO.
Black Diamond Mine, Drift, 3 ft. 4 in. to 4 ft. thick.
PO—Brockwayville, Pa. SP—Same. CTY—Jefferson.
PR—D. D. Groves.....Brockwayville, Pa.
TR—D. D. Groves, " "
GM—D. D. Groves, " "
PA—W. M. August, " "
GS—W. M. August " "
EM—W. M. August, " "
MM—Wm. Shaffer, " "
MS—Wm. Harris, " "
S of H—Mules. Track gauge 36 in.
S of M—6 Comp. air mach. and hand.
PP—1 Return tubular boiler, 125 H. P., 1 compressor, and 2 pumps.
EMP—50. Last fiscal year output 37,500 tons.
Sales Agent, D. D. Groves, Brockwayville, Pa.

TOWER HILL CONNELLSVILLE COKE CO.
General Office, ... Uniontown, Pa.
PR—J. V. Thompson, " "
TR—J. R. Nutt, Cleveland, Ohio.
GM—L. W. Fogg, Uniontown, Pa.
GS—J. R. Thompson, Republic, Pa.
SCO—Tower Hill Supply Co., Republic, Pa. Sales Agent, Producers Coal Co., Uniontown, Pa.

Tower Hill No. 1, Shaft, Pittsburgh Seam, 8 ft. thick.
PO—Republic, Pa., SP—Same, CTY—Fayette. RR—Monon RR.
S of H—Mules and 4 comp. air loco.
S of M—Hand. and 14 comp. air mach.
PP—3 Return tubular boilers, total 1212 H.P., 2 engines, 220 volts D.C., 2 air compressors and 1 pump.
EMP—372. Coke ovens, 112 Bee Hive and 193 Rectangular.

Tower Hill No. 2, Shaft, Pittsburgh Seam, 8 ft. thick.
PO—Brownsville, Pa., R.D. No. 20. SP—Republic, Pa. CTY—Fayette. RR—Monon. R.R.
S of H—Mules and 3 comp. air loco.
S of M—Hand and 16 comp. air mach.
PP—3 Return tubular boilers, total 1212 H.P., 2 engines, 220 volts D.C., 2 air comp. and 1 pump.
EMP—359. Coke ovens, 140 Bee Hive and 254 Rectangular.

TUB MILL COAL CO.
Tub Mill Mine; Drift; Pgh. Seam, 96 in. thick.
PO—West Salisbury, Pa.; SP—Same; CTY—Somerset; RR—B. & O., Salisbury Branch.
PR—H. F. Knecht, W. Salisbury, Pa.
TR—L. L. Beachy, " " "
GM—John A. Knecht, " " "
PA—John A. Knecht, " " "
MS—John A. Knecht, " " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—9. Last fiscal year output 12,000 tons.

TUNNEL COALING CO.
General Office, Greensburg, Pa.
PR—Julian B. Huff.....Greensburg, Pa.
TR—A. N. Pershing, " "
GM—A. N. Pershing, " "
PA—A. N. Pershing, " "
CE—Robert Morris, " "
EM—Robert Morris, " "
GS—M. J. Bracken.....Gallitzin, Pa.
EE—J. B. Morrill, " "
SCO—Tunnel Supply Co., Buyer, J. Clyde Wetson, Gallitzin, Pa.

Tunnel No. 1 Mine; Drift; "E" Seam; 48 in. thick.
PO—Gallitzin, Pa.; SP—Same; CTY—Cambria; RR—Penna.
MS—M. J. Bracken.....Gallitzin, Pa.
S of H—Mules, rope, 2 Elec. and 1 steam loco.
S of M—Hand and 6 Elec. mach.
PP—4 Return tubular boilers and 2 gen. units.
EMP—247. Last fiscal year output 168,724.05 tons.

Cardiff Mine; Slope; "B" or Miller Seam; 44 in. thick.
PO—Nettleton, Pa.; SP—Nanty Glo, Pa.; CTY—Cambria RR—Penna., Black Lick Div.
MS—James Walker.....Nettleton, Pa.
S of H—3 Elec. loco.
S of M—5 Elec. mach.
EMP—218. Last fiscal year output 177,202.8 tons.

Greenwich Nos. 2 and 3 Mines; Drift and Slope "D" Seam; 46 in. thick.
PO—Saxman, Pa.; SP—Garman, Pa.; CTY—Cambria; RR—Penna., Cresson Div.
MS—Fred Vinton.....Saxman, Pa.
S of H—Rope and 5 Elec. loco.
EMP—287. Last fiscal year output 227,789.08 tons.

Greenwich Nos. 5 and 8 Mines; Drift and Slope; "B" Seam; 36 in. thick.
PO—Starford, Pa.; SP—Shanktown, Pa.; CTY—Indiana; RR—Penna., Cresson Div., Cherry Tree & Dixonville R. R.
MS—Wm. Reed.....Starford, Pa.
S of H—4 Elec. loco.
EMP—252. Last fiscal year output 177,338.58 tons.

UNION COLLIERIES CO.
Incorporators, E. A. Morton, Dravosburg, Pa.; T. F. Soles, McKeesport, Pa.; L. J. Brown, Pittsburgh, Pa.
Note—Not operating. Still in process of formation.

UNION CONNELLSVILLE COKE CO.
General Office, Uniontown, Pa.
Katherine Mine, Shaft.
PO—Brownsville, Pa., R.D. No. 20. SP—Simpson, Pa. CTY—Fayette. RR—Monon.
GM—Wm. Allison, .. Uniontown, Pa.
PA—Wm. Allison, " "
SCO—Simpson Supply Co. Mgr. T. L. Wilkinson, R.D. No. 20, Brownsville, Pa.
S of H—Mules.
S of M—Hand.
PP—4 return tubular boilers, total 600 H. P., 1 pump.
EMP—105. Coke ovens, 140.

UNITED COAL CO
General Office, First National Bank Bldg., Pittsburgh, Pa.
James D. O'Neil, Receiver.
Sam A. Gilmore, " "
Robert P. Watt, "
Wm. K. Johnson, "
GS—E. L. Morris.....Pittsburgh, Pa.
PA—J. I. Boyd, " "
EM—H. M. Senmidt, " "
MM—Thos. Haulton, " "
EE—Thos. Haulton, " "
SCO—Penn Mercantile Co., Buyer, H. D. Bittner, Pittsburgh, Pa.

Ella Mine, Drift, Pgh. Seam, 6ft. thick.
PO—Sunnyide, Pa.; SP—Millsville, Pa.; CTY—Allegheny; RR—P. & L. E.
MS—Chas. Elliott.....Sunnyside, Pa.
S of H—6 Elec. loco., mules and rope, track gauge 44 in.
S of M—15 Elec. mach.
PP—4 Return tubular boilers total 600 H. P., 3 gen. units 750 volts D. C., 1 pump.
EMP—475. Last fiscal year output 240,140 tons.

Rich Hill Mine, Slope, Pgh. Seam 6 ft. thick.
PO—Meadowlands, Pa.; SP—Same; CTY Washington; RR—P.C.C.& St. L.
MS—Wm. Minford..Meadowlands, Pa.
SM—J. J. Jones, "
S of H—4 Elec. loco., mules and rope. track gauge 44 in.
PP—2 Water tube and 3 return tubular boilers, total 650 H. P., 2 gen. units 250 D. C., 2 compressors, 2 pumps.
EMP—575. Last fiscal year output 338,244 tons.

Patterson Mine, Drift, Pgh. Seam 6 ft. thick.
PO—Elizabeth, Pa. SP—Wylie, Pa. CTY—Allegheny. RR—P. & L. E.
MS—S. M. Daugherty .....Elizabeth
S of H—9 elec. loco, 1 steam loco, mules and rope. Track gauge 44 in.
S of M—15 elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 2 gen. units 500 volts D. C., 3 pumps. Purchase power.
EMP—450. Last fiscal year output 196,522 tons.

UNITED CONNELLSVILLE COKE CO.
See Westmoreland Gas Coal Company.

UNITED STATES SEWER PIPE CO.
General Office, Pittsburgh, Pa.
Johnetta No. 2 Mine, Shaft.
PO—Johnetta, Pa.. CTY—Armstrong.
PR—John H. Jones....Pittsburgh, Pa.
TR—J. E. Stewart.....Canonsburg, Pa.
GM—J. E. Stewart, " "
PA—M. F. McDermott.Pittsburgh, Pa.
CE—A. C. Beeson, " "
EM—A. C. Beeson, " "
SCO—White Rock Supply Co., Buyer. M. F. McDermott, Pgh., Pa.
S of H—9 Elec. loco.
S of M—3 Elec. mach.
PP—3 boilers total 450 H.P.; 1 gen. unit; 1 air comp. and 1 pump.
EMP—83. Last fiscal year output 81,636 tons.

UNITED FIRE BRICK CO.
General Office, Uniontown, Pa.
Ferguson Mine; Drift.
PO—Dunbar, Pa.; SP—Ferguson, Pa.; CTY—Fayette; RR— B.& O.
PR—T. B. Palmer....Uniontown, Pa.
TR—I. W. Seamans, " "
GM—G. W. Greenwood, " "
PA—G. W. Greenwood, " "
GS—Paul Schmidt, " "
S of H—1 Elec. loco.
S of M—Hand.
PP—Purchase power.

UNITED STATE BUREAU OF MINES.
Experimental Mine; Pgh. Seam, 60 in. thick.
PO—Bruceton, Pa.; SP—Experiment, Pa; CTY—Allegheny; RR—B. & O.
MS—H. C. Howarth.....Bruceton, Pa.
EM—L. M. Jones.....Pittsburgh, Pa.
S of M—1 Comp. air mach.
PP—1 Compressor.
Mine is used for experimental purposes.

UNITY COAL CO.
General Office, Greensburg, Pa.
Carney Mine, Drift, Up Freeport Seam, 40 to 44 in. thick.
PO—R. F. D. No. 2 Latrobe, Pa.; SP—Donahoe, Pa.; CTY—Westmoreland; RR—P. R. R.
PR—J. B. Huff, Greensburg, Pa.
GM—A. N. Pershing, " "
PA—A. N. Pershing, " "
CE—Robt. Morris, " "
EM—Leo C. Gibson, " "
TR—Jos. E. Barnett.....Latrobe, Pa.
GS—Edward Soppitt, " "
MS—James McKeehan, " "
SM—J. E. Heck, " "
S of H—3 Elec. loco., rope and mules; track gauge 36 in.
S of M—6 Elec. mach. and hand.
PP—4 Erie return tubular boilers, total 500 H. P., 3 pumps.
EMP—150. Last fiscal year output 68,210 tons.

UNITY COAL & COKE CO
Berwindale, Pa. No report.

UNITY-CONNELLSVILLE COKE CO
Elizabeth Mine, Slope, Pgh. Seam 5 to 9 ft. thick. operate washery.
PO—Latrobe, Pa.; SP—Same; CTY—Westmoreland. RR—P.R.R., Ligonier Valley Branch.
PR—J. A. Sheetz.....Greensburg, Pa.
TR—W. D. Walthour..Greensburg, Pa.
GM—J. F. Irwin.....Latrobe, Pa.
CS—J. F. Irwin, " "
PA—J. F. Irwin, " "
EM—J. F. Irwin, " "
MS—Wm. Davis, " "
MM—Daniel Pearson, " "
S of H—Mules and rope; track gauge 42 in.
S of M—Hand.
PP—4 Erie return tubular boilers, total 400 H.P., 3 pumps, also purchase power.
EMP—100. Coke ovens, 100 Bee Hive.

UREY RIDGE COAL CO.
General Office, Philadelphia, Pa.
Urey Ridge Mine, Drift, C. Prime Seam, 3½ ft. to 5 ft. thick.
PO—Glen Campbell, Pa. SP—Same. CTY—Indiana. RR—P. R. R.
PR—G. B. Roberts.....Philadelphia, Pa.
TR—W. A. Smith, " "
PA—A. Y. Stevenson, " "
GM—A. M. Riddell.....Altoona, Pa.
EM—A. B. Crichton.....Johnstown, Pa.
MS—Jas. Bowers...Glen Campbell, Pa.
S of H—Mules. Track gauge 36 in.
S of M—Hand and 5 elec. mach.
PP—2 return tubular boilers, total 160 H. P., power furnished from Glenwood Coal Co.
EMP—125. Last fiscal year output 114,307 tons.
Sales Agent, David E. Williams & Co., Philadelphia, Pa.

VALLEY CAMP COAL CO.
General Office, Cleveland, O.
1 mine in Penna., 1 mine in Ohio.
Valley Camp Mine; Drift; Freeport Seam, 6 ft. thick.
PO—New Kensington, Pa.; SP—Valley Camp, Pa. CTY—Westmoreland. RR—P.R.R.,B.&A.V. Div.
PR—J. A. Paisely.....Cleveland, O.
GM—J. A. Paisely, " "
TR—W. W. Woods, " "
PA—H. E. Kinloch....Parnassus, Pa.
CS—H. E. Kinloch, " "
MS—John McVicker New Kensington,Pa.
S of H—5 Elec. loco.; track gauge 44 in.
S of M—5 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 2 gen. units 250 volts D. C., 1 pump.
EMP—300. Last fiscal year output 422,085 tons. Sales agent, J. A. Paisley, Cleveland, O.

VALLEY COAL CO.
Valley Mine, Drift, Up. Freeport Seam 44 in. thick.
PO—Leechburg, Pa.; SP—Same; CTY—Westmoreland. RR—P. R. R., Conemaugh Div.
PR—Alfred Hicks .....Pittsburgh, Pa.
TR—Jos. G. Beale....Leechburg, Pa.
GM—Jos. G. Beale, " "
GS—E. H. Beale, " "
MS—E. H. Beale " "
PA—S. J. McCabe, " "
EM—E. A. Watters, " "
S of H—Mules; track gauge 36 in.
S of M—3 Elec. mach.
PP—1 Gen. unit, 500 volts, A. C. & D. C., 3 phases and 60 cycles, 2 pumps. Purchase pawer.
EMP—60 Last fiscal year output 48,000 tons.

VALLEY COAL & COKE CO.
Rimerton Mine; Drift; Kittanning Seam, 4 to 6 ft. thick.
PO—Rimer P. O., Pa.; SP—Rimerton and Montgomery, Pa.; CTY—Armstrong; RR—(R) P. R. R. (M) B. R. & P.
Continued on Next Page.

VALLEY COAL & COKE CO.—Continued.
PR—J. H. Proeger...Rimer P.O., Pa.
GM J. H. Proeger, " " "
GS—H. B. Cooper, " " "
PA—E. W. Proeger, " " "
MS—J. B. Williams, " " "
TR—L. M. Irwin.....Avella, Pa.
Sco—McCune Supply Co., Rimer, Pa.
S of H—Mules and gravity.
S of M—10 Comp. air mach.
PP—2 Erie boilers, total 160 H.P.; 2 pumps.
EMP—100. Output 400 tons per day.

VALLEY SMOKELESS COAL CO.
General Office, Johnstown Trust Bldg., Johnstown, Pa.
PR—J. Blair Kennerly, Phila., Pa.
TR—F. F. Bartholemew, " "
GM—C. C. Dovey.....Johnstown, Pa.
PA—C. C. Dovey, " "
EM—H. C. Dick, " "
EE—Jos. Walton, " "
MM—Edw. Trexel, " "
SCO—Ninevah Supply Co., Buyer, S. A. Krider.

Valley Smokeless No. 1, Drift, "C" Prime Seam, 5 to 6 ft. thick.
PO—Johnstown, Pa., SP—Same, CTY—Cambria. RR—P.R.R. and B. & O.
MS—Edw. Mitchell.....Johnstown, Pa.
SM—Herman Trexel, " "
S of H—6 Elec. loco., track gauge 36 in.
S of M—7 elec. machines; also hand mining.
PP—Induction motors 250 K. W., 250 volts, D. C., 3-phase, 60-cycle Buy power.
EMP—325. Last fisral year output 330,000 tons.

Valley Smokeless No. 2, Shaft, "B" or Miller Seam, 3 1-2 ft. to 4 1-2 ft. thick.
PO—Seward, Pa., SP—Same, CTY—Westmoreland.
RR—P. R. R. Main Line.
MS—W. A. Strong.....Seward, Pa.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 400 H. P. also Buy Power.
EMP—125. Last fiscal year output 80,000 tons.

Valley Smokeless No. 5, Drift, E or Cokeyard Seam, 3 1-2 ft. thick.
PO—Johnstown, Pa., SP—Same, CTY—Cambria.
RR—P.R.R. and B. & O.
MS—James Turnbull....Johnstown, Pa.
S of M—Mules. Track gauge 36 in.
S of M—Hand.
10,000 tons. New mine.
EMP—75. Last fiscal year output 50,000 tons.

Valley Smokeless No. 6, Drift, B or Miller Seam, 3 ft. 8 in. thick.
PO—Seward, Pa., SP—Same, CTY—Westmoreland.
RR—P.R.R., Main Line.
MS—W. A. Strong..... Seward, Pa.
S of H—Rope and mules; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, 200 H.P. 1 pump.
EMP—90. Last fiscal year output 80,000 tons.

VALIER COAL CO
See Sutter Coal Co.

VANDERGRIFT COAL CO.
Mine abandoned.

VERNER COAL & COKE CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
PR—C. Ferguson.. McDonald, Pa.
Asst. TR—H. B. Salkeld, Pittsburgh, Pa.
PA—H. B. Salkeld, " "
GM—Thomas Beading.....Bulger, Pa.
EE—Wm. Clark, " "
SCO—Bulger Supply Co., Buyer Wm. Johnson, Bulger, Pa.
Sales Agent, H. B. Salkeld, Pittsburgh, Pa.

Verner No. 1 Mine; Slope, Pgh Seam, 60 to 77 in. thick.
PO—Bulger, Pa.; SP—Same; CTY—Washington; RR—P. C. C. & St. L.
S of H—Elec. loco. track gauge 42 in.
S of M—13 Elec. mach.
PP—4 Gen. units 440 volts A. C., 2 phase, 60 cycles, 11 pumps. Power purchased.
EMP—350. Last fiscal year output 300,000 tons.

Cedar Grove No. 2 Mine; Slope, Pgh. Seam, 60 to 78 in. thick.
PO—Studa, Pa.; SP—Burgettstown, Pa.; CTY—Washington; RR—P. C. C. & St. L.
MS—Ed Miller.....Studa, Pa.
S of H—Elec. and steam loco.; track gauge 42 in.
S of M—2 Elec. mach.
PP—2 Water tube boilers, gen. unit 250 volts D. C., 3 pumps.
EMP—75. New mine, just opening.

VERSTINE HIBBARD & CO.
Out of business.

VESTA COAL CO.
General Office, J. & L. Bldg., Pittsburgh, Pa.
PR—B. F. Jones, Jr.....Pittsburgh, Pa.
TR—Chas. A. Fisher, " "
GM—Wm. Larimer Jones, " "
PA—F. W. Ochsenhirt, Jr. " "
CE—D. L. Mekeel, " "
EE—H. H. Laughlin, " "
GS—H. B. Louttit.....California, Pa.
SCO—Pittsburgh Mercantile Co., Pittsburgh, Pa.

No. 1 Mine; Drift; Pittsburgh Seam, 68 to 78 in. thick.
PO—California, Pa.; SP—Allenport, Pa.; CTY—Washington; RR—P. R. R., Monon. Div.
MS—W. R. Musser.....California, Pa.
S of H—Mules.
S of M—Hand.
EMP—24. Last fiscal year output 28,633 tons.

No. 2 Mine; Drift; Pittsburgh Seam, 64 to 96 in. thick.
PO—California, Pa.; SP—Roscoe, Pa.; CTY—Washington; RR—P. R. R., Monon. Div.
MS—W. R. Musser.....California, Pa.
S of H—1 Elec. loco. and mules.
S of M—Hand.
PP—Purchase power.
EMP—115. Last fiscal year output 125,264 tons.

No. 3 Mine; Drift; Pittsburgh Seam, 48 to 90 in. thick.
PO—California, Pa.; SP—Coal Center, Pa.; CTY—Washington RR—P. R. R. Monon Div.
MS—W. R. Musser.....California, Pa.
S of H—2 Elec. loco. and mules.
S of M—Hand.
PP—Purchase power.
EMP—254. Last fiscal year output 199,528 tons.

No. 4 Mine; Drift; Pittsburgh Seam, RR—P. R. R., Monon. Div.
PO—California, Pa.; SP—Same; CTY—Washington; RR—P. R. R., Monon. Div.
MS—Robert Barr.....California, Pa.
S of H—36 Elec. loco. and rope; track gauge 48 in.
S of M—32 Elec. mach.
PP—18 boilers, total 3,345 H. P., 3 gen. units 500 volts A. C., 19 pumps.
EMP—1,484. Last fiscal year output 1,700,779 tons.

No. 5 Mine; Drift; Pittsburgh Seam, 57 to 93 in. thick.
PO—California, Pa.; SP—Centerville, Pa.; CTY—Washington; RR—P. R. R., Monon. Div.
MS—Peter Neil.....Fredericktown, Pa.
S of H—Rope and 15 Comp. air loco.; track gauge 48 in.
S of M—15 Elec. and 18 Comp. air mach.
PP—8 Return tubular boilers, total 2400 H. P., 7 compressors and 1 pump.
EMP—856. Last fiscal year output 747,550 tons.

VETERAN COKE CO.
General Office, Greensburg, Pa.
Veteran Mine, Drift; Connellsville Seam 9 ft. thick.
PO—Mt. Pleasant, Pa.; SP—Udell Station, Pa.; CTY—Westmoreland; RR—P.R.R., South West Br.
PR—J. A. Strickler, Wilkinsburg, Pa.
TR—J. V. Kuhns.....Greensburg, Pa.
GM—J. C. Kline, " "
GS—C. J. Kline, " "
PA—C. J. Kline, "
MS—M. E. Strickler, Mt. Pleasant, Pa.
SCO—Mt. Pleasant Supply Co., Buyer, G. E. Nicely, Greensburg, Pa.
S of H—1 Steam loco. and rope track gauge 44 in.
S of M—Hand.
PP—Power puchased, 2 pumps.
EMP—75. Coke ovens, 80 Bee Hive. Last fiscal year output 75370 tons.

VICTOR COAL MINING CO.
General Office, Somerset, Pa.
Haws Nos. 1, 2, and 3 Mines; Shaft and Slopes; Upper and Lower Kittanning Seams, 36 to 78 in. thick.
PO—Hollsopple, Pa.; SP—Same; CTY—Somerset. RR—B. & O., Somerset & Cambria Branch.
PR—Joel H. DeVictor, West End Trust Bldg., Philadelphia, Pa.
TR—Thos. R. Patton, 1713 Sansom St. Philadelphia, Pa.
GM—Lloyd G. McCrum, Somerset, Pa.
PA—Lloyd G. McCrum, " "
MM—J. J. Hershberger....Holsopple, Pa.
EM—S. E. Dickey & Co. Johnstown, Pa.
SCO—Holsopple Supply Co. Buyer, S. J. Lehman, Holsopple, Pa.
MS—J. W. Pletcher, ..Holsopple, Pa.
S of H—Mules and rope.
S of M—Hand and 19 Comp. air mach.
PP—4 Water tube boilers, total 600 H. P., 2 compressors, 14 pumps.
Last fiscal year output 111,115 tons.
Sales Agent, W. H. Bradford & Co., Inc., New York City and Philadelphia, Pa.

VICTORIA COAL CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
Victoria No. 1 Mine, Drift, up. Freeport Seam, 48 to 60 in thick.
PO—Queen Junction, Pa.; SP—Same; CTY—Butler; RR—B. & L. E., Main Line.
PR—Chas. S. Bygate....Pittsburgh, Pa.
TR—Fred Stover, " "
GM—Fred Stover, " "
PA—Fred Stover, " "
MS—John Mathison, Queen Junction, Pa.
SCO—Imperial Supply Co., " "
S of H—Mules.
S of M—2 Elec., 2 comp. air mach.
PP—2 Return tubular boilers, total 200 H. P., gen. unit 250 volts D. C., 2 compressors, 1 pump.
EMP—50. Last fiscal year output 50,000 tons.
Sales Agency, Theiss, Bygate Co, Pittsburgh, Pa.

VICTORIA COAL MINING CO.
General Office, 11 Broadway, New York.
PR—C. J. Wittenberg.....New York.
TR—E. J. Macnamara, " "
GS—S. B. Wittenberg, Phillipsburg, Pa.
EM—Womelsdorff & Dunkle, " "
PA—John W. Ball....Morrisdale, Pa.
EE—Sam. E. Fowler, " "
SCO—Pennsylvania Mercantile Co., Ltd., Buyer, Ephriam Goldthorp, Philipsburg, Pa.
Sales Agent, C. J. Wittenberg, 11 Broadway, New York.

Acme Colliery No. 2, Slope, "B" Vein, 40 to 48 in. thick.
PO—Hawk Run, Pa. SP—Same, CTY—Clearfield. RR—N.Y.C. & H.R. R., Beech Creek District.
MS—Fred Mears, Hawk Run, Pa.
S of H—Mules, rope and elec. loco. track gauge 35 in.
S of M—Pick.
PP—4 Lebanon cylindrical boilers, and 1 Erie return tubular boiler, total 365 H.P. 6 pumps, also buy power.
EMP—90. Last fiscal year output 61,960 tons.

Acme Colliery No. 6, Drift, "B" Vein, 44 in. thick.
PO—Hawk Run, Pa., SP—Same, CTY—Clearfield RR—N.Y.C. & H.R.R., Penna. Div.—Beech Creek District
S of H—Mules, and 2 elec. loco., track gauge 35 in.
S of M—Pick and 2 elec. machines.
PP—1 pump. Buy power.
EMP—75. Last fiscal year output 50,156 tons.

VINTON COLLIERY CO.
General Office, No. 1 Broadway, New York, N. Y.
Vinton Nos. 1, 2, 4, 5, and 6 Mines; Drifts and Slopes; "B" Seam, 42 in. thick.
PO—Vintondale, Pa.; SP—Same; CTY—Cambria; RR—P. R. R., and B. R & P.
Chairman Ex. Com.—Warren Delano, New York, N. Y.
PR—C. M. Schwerin, " "
GM—C. M. Schwerin, " "
TR—A. T. Burr, " "
PA—Geo. S. Blewitt.....Vintondale, Pa
CE—T. W. Hamilton, " "
MS—Otto Hoffman, " "
EM—J. J. Huth, " "
MM—John Roberts, " "
EE—C. G. Shaffer, " "
S of H—2 Steam, 16 Elec. locos. and rope; track gauge 36 in.
S of M—24 Elec. mach.
PP—4 Sterling water tube boilers, total 2000 H. P. Power from Central station.
EMP—900. Coke ovens, 152 Bee Hive. Last fiscal year output 612,000 tons.
Sales Agent, address the New York office.

VIVIAN COAL CO.
Vivian No. 1 Mine; Slope "C" Seam; 36 in. thick.
PO—Utahville, Pa.; SP—Heverly, Pa.; CTY—Clearfield.
PR—Charles D. Hines..Philadelphia, Pa.
GM—Charles D. Hines, " "
GS—Charles D. Hines, " "
TR—W. W. Hess, " "
PA—W. W. Hess, " "
MF—P. J. White.....Coalport, Pa.
EM—W. W. Hellman, Jr.
S of H—Rope and gravity, track gauge 36 in.
PP—1 Return tubular boiler, 100 H. P.; 1 pump.
EMP—75. Last fiscal year output 10,000 tons (mine idle spring of 1914 and part of summer). Sales Agency, Pattison & Bouns, No. 1 Broadway, New Yohk City.
Formerly Vivian Mine of the J. Blair Kennerly Operations.

VOGELEY COAL CO.
Vogeley Mine, Drift, Up. Freeport Seam 40 to 42 in. thick.
PO—Butler, Pa.; SP—Same; CTY—Butler. RR—P.R.R.
GM—Theo. Vogeley.....Butler, Pa.
GS—Theo. Vogeley, " "
PA—Theo. Vogeley, " "
MS—Harry Gould, " "
R.F.D. No. 5.
S of H—1 Elec. loco.; track gauge 30 in.
S of M—1 Elec. mach.
EMP—45. Last fiscal year output 36,000 tons.

WALKER, E. J. & CO.
Stanley No. 2 and Troy Nos. 1 and 2; Slope and Drift; 3½ to 5 ft. thick.
PO—Brisbin, Pa.; SP—Houtzdale; CTY—Clearfield; RR—P.R.R. Amesville Branch.
GM—J. D. Walker.....Brisbin, Pa.
MS—J. D. Walker, " "
EM—S. M. Herriett, " "
EE—Willard Walker, " "
SM—E. J. Walker, " "
S of H—Mules and steam loco.; track gauge 36 in.
S of M—Hand.
PP—Power purchased, gen. units 220 volts A. C., 3 phase, 60 cycles, 3 elec. pumps. Buy power.

WALLWORK COAL CO.
Out of business.

WALTERSBURG COKE CO.
General Office, Uniontown, Pa.
Edna Mine, Slope, Pgh. Seam 6 to 9 ft. thick.
PO—Waltersburg, Pa.; SP—Same; CTY—Fayette. RR—P.R.R., P.V. & C. Branch.
PR—W. A. Stone....Uniontown, Pa.
GM—W. A. Stone, " "
PA—W. A. Stone, " "
TR—W. C. Black, " "
MS—O. P. Stone....Waltersburg, Pa.
CE—Fayette Engineering Co., Uniontown, Pa.
SCO—Waltersburg Supply Co.; Buyer Harry E. Henshaw, Waltersburg, Pa.
S of H—Rope and 3 Elec. loco.; track gauge 42 in.
S of M—Hand.
PP—2 Return tubular boilers, total 100 H. P. Purchase power.
EMP—150. Coke ovens, 150 Bee Hive. Last fiscal year output 70,000 tons.
Sales Agent, W. A. Stone & Co., Uniontown, Pa.

WARNER LEONARD COAL CO.
General Office, 811 Leader Bldg., Cleveland, Ohio.
Kinder Mine, Slope, Pittsburgh Seam, 7 ft. thick.
PO—West Brownsville, Pa., SP—Same, CTY—Washington. RR—Penna., P.V. & C. Branch.
GM—W. H. Warner....Cleveland, O.
PA—K. B. Whitworth, " "
EM—E. L. Thrower, " "
MS—John E. Leonard, W. Brownsville, Pa.
S of H—Mules and rope; track gauge 44 in.
S of M—4 Elec. machines.
PP—2 Return tubular boilers, total 200 H. P., 1 gen. unit 250 volts D. C. 2 pumps.
EMP—128. Last fiscal year output 150,639 tons.
Sales Agents, W. H. Warner & Co., Cleveland, Ohio.

WARNER YOUGHIOGHENY COAL CO.
General Office, 811 Leader Building. Cleveland, Ohio.
Leonard Mine, Drift, Pittsburgh Seam, 8 ft. thick.
PO—Fayette City, Pa. SP—Fayette City, Pa., and Landon, Pa. CTY—Fayette; RR—P. & L. E.
GM—W. H. Warner, Cleveland, Ohio.
EM—E. L. Thrower, " "
PA—K. B. Whitworth, " "
MS—John E. Leonard..Fayette City, Pa.
S of H—4 Elec. loco. Track gauge 44 in.
S of M—7 Elec. machines.
PP—Buy power. 3 pumps.
EMP—333. Last fiscal year output, 368,745 tons. Sales Agent, W. H. Warner & Co., Cleveland, Ohio.

WASHINGTON COAL & COKE CO.
General Office, ... Dawson, Pa.
PR—M. M. Cochran, " "
TR—J. H. Price, " "
EM—Thos. M. Zimmerman, "

Continued on Next Page.

GM—H. M. McDonald. .Star Junction, Pa.
PA—H. M. McDonald, " "
GS—R. M. Pollock, " "
SCO—Star Supply Co., Ltd. Buyer, J. B. Knox, Star Junction, Pa.

Sales agent, N. P. Hyndman, 2211 First Nat. Bk. Bld'g. Pgh.

Washington No. 1 Shaft, Pittsburgh Seam, 6½ to 9 ½ ft. thick.
PO—Star Junction, Pa. SP—Same. CTY—Fayette. RR — Washington Run R. R., B. & O. and P. & L. E.
MS—R. M. Pollock, Star Junction, Pa.
S of H—Horses, rope and 6 elec. and 3 steam locos. Track gauge 44 in.
S of M—Hand, and 15 compressed air machines.
PP—4 Water tube and 7 return tubular boilers, total, 2,000 H.P. 4 Gen. units, 2,300 volts, A. C., 3-phase, 60 cycle, and 550 volts, D.C. 3 Air Compressors and 4 pumps.
EMP—500. Last fiscal year output, 560,000 tons. 500 Bee Hive coke ovens. 150 coke workers.

Washington No. 2 Slope, Pittsburgh Seam, 6½ to 9 ft. thick.
PO—Star Junction, Pa. SP—Same. CTY—Fayette. RR—Washington Run, B. & O. and P. & L. E.
S of H—Horses, rope and 6 Elec. loco. Track gauge 44 in.
S of M—Hand and 12 compressed air machines.
PP—12 Return tubular boilers, total 1700 H.P. 1 Gen. unit 550 volts D.C. 2 Air compressors and 5 pumps.
EMP—500. Last fiscal year output, 555,000 tons. 500 Bee Hive coke ovens. 150 coke workers.

Washington No. 3, Slope, Pittsburgh Seam 76 to 84 in. thick.
PO—Perryopolis, Pa. SP—Same. CTY Fayette, RR—P. & L. E.
MS—Fred Baker, Perryopolis, Pa.
S of H—Horses and rope; 1 elec. loco. Track gauge 42 inches.
S of M—Pick, and 2 compressed air machines.
PP—5 Return tubular boilers, total 625 H.P., 1 Gen. unit, 250 volts, D. C. 1 Air Comp., 2 Pumps.
EMP—69. Last fiscal year output 50,000 tons.

WATKINS COAL CO.
General Office, 17 Battery Place, N.Y.
Watkins Mines Nos. 1, 2, and 3; Drifts; U. and L. Freeport Seams; 3 ft. 6 in. to 4 ft. 8 in. thick.
PO—Barnesboro, Pa.; SP—Same; CTY—Cambria; RR—P. R. R., Walnut Run Br.
PR—C. L. Watkins.....N. Y. City
TR—J. C. Thornton, " "
GM—C. L. Watkins, " "
PA—J. G. Nicholson, Barnesboro, Pa.
MF—Wm. Easton, Frank Nicholson, and George Nicholson, Barnesboro, Pa.
MM—Harvey Pfeffer, " "
CE—C. E. Schlicher...Spangler, Pa.
EM—C. E. Schlicher, " "
S of H—5 Elec. loco.; track gauge 36 in.
S of M—Hand, 5 Elec. and 11 comp. air mach.
PP—4 Return tubular boilers, total 460 H. P. 1 gen. unit, 250 volts D. C., 2 compressors.
EMP—300. Last fiscal year output 204,407 tons.
Sales Agent, J. M. Townsend, Jr., New York, N. Y.

WAVERLY COAL & COKE CO.
General Office, 2212 Oliver Bldg., Pgh., Pa.
Waverly Mine, Drift, Pgh. Seam, 4 ft. 8 in. thick.
PO—Virginville, W. Va. SP—Penowa, Pa.; CTY—Washington; RR—Wabash.
PR—E. M. Love, .. Pittsburgh, Pa.
TR—G. W. Kepler, " "
PA—F. C. Bortz, " "
GM—R. M. Cook.....Washington, Pa.
MS—James McGuire....Virginville, W.Va.
CE—J. J. Roby, ... Cleveland, O.
EM—M. P. Clark .....Russelton, Pa.
MM—J. M. Collier, " "
EE—Louis Headington, Virginville, W.Va.
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—4 Elec. mach.
PP—3 Erie City return tubular boilers, total 450 H. P., 6 pumps.
EMP—165. Last fiscal year output, 100,000 tons. Sales Agent, F. S. Love, Pittsburgh, Pa.

WELLER COAL CO.
Slope Mine; Cement Seam; 32 to 36 in. thick.
PO Johnstown, Pa.; SP Same; CTY Cambria; RR—P. R. R.
PR—L. M. Weller.....Johntsown, Pa.
TR—L. M. Weller, " "
GM—C. C. Cupp, " "
MS—Albert Machine, " "
SCO—Cupp Grocery Co, " "
S of H—Rope.
New Operation.

WEINMAN BROTHERS.
Weinman's Mine, Drift; "Pittsburgh" Seam; 6 ft. thick.
..PO—Wilkinsburg, Pa. SP—Same. CTY—Allegheny. RR—P. R. R.
GM—J. Weinman,. Wilkinsburg, Pa.
MS—J. Weinman, " "
PA—J. Weinman, " "
S of H—Mules. Track gauge 40 in.
S of M—Hand.
EMP— 3 to 15.

WEISE, E R, COAL CO.
Abandoned.

WENTZ SMOKELESS COAL CO.
Pretoria Nos. 1, 2, and 3 Mines; Drifts and Slope; "C" Prime and "B" Miller Seams, 40 to 42 in. thick.
PO—Hollsopple, Pa.; SP Same; CTY—Somerset; RR—B. & O.
TR—R. J. Wentz.....Hollsopple, Pa.
GM—R. J. Wentz, " "
PA—R. J. Wentz, " "
MM—C. L. Castler, " "
EE—C. L. Castler, " "
CE—C. E. Dickey.....Johnstown, Pa.
S of H—3 Elec. and 2 Steam loco., rope and mules.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, 200 H. P., 1 pump.
EMP—275. Last fiscal year output 175,000 tons.
Sales Agent, R. J., Wentz, Hollsopple, Pa.

WEST LEECHBURG STEEL CO.
General Office, Farmers Bank Bldg., Pittsburgh, Pa.
West Leechburg Mine.
PO—Leechburg, Pa.; CTY—Armstrong; PR—James Lippincott.
VICE PR—J. L. Kirkpatrick.
TR—D. M. Campbell.
Maintain a small mine for our own use and do not sell any of the output.

WESTMORE COAL & COKE CO.
Westmore Mine. CTY—Westmoreland.
GS—C. C. Baldwin....Forbes Road, Pa.
MS—Thomas McCartney, New Alexandria, Pa.
No report.

WEST PENN COAL MINING CO.
General Office, Bullitt Bldg., Philadelphia, Pa.
West Penn Nos. 1 and 2 Mines; Drifts; L. Kittanning Seam, 42 to 54 in. thick.
PO—Apollo, Pa. SP—Same; CTY—Armstrong. RR—P. R. R., Apollo Branch.
PR—Herman Haupt, Philadelphia, Pa.
TR—W. M. Haupt... Versailles, Ky.
Asst TR—Edw. I. Haupt....Apollo, Pa.
PA—Edw. I. Haupt, " "
MS—Edw. I. Haupt, " "
CE—Albert Smith, ...Saltsburg, Pa.
S of H—3 Elec. loco. Track gauge 36 in.
S of M—Hand.
PP—Power purchased.
EMP—250 to 300. Output per day, 700 to 800 tons. Sales Office. Philadelphia, Pa.

WEST PENN MINING CO.
West Penn Mine, Drift.
PO—Leechburg, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R., Conemaugh Div.
GM—L. W. Hicks.....Leechburg, Pa.
PA—L. W. Hicks, " "
MS—Wm. Gilson, " "
S of H—Mules.
S of M—Elec. mach.
EMP—50. Last fiscal year output 44,524 tons.

WESTERMAN-FILER CO.
General Office, Sharon, Pa.
Diamond No. 3 Mine, Slope; "Brookville" Seam, 4 ft. thick.
PO—Grove City, Pa.; SP—Same. CTY—Mercer. RR—B. & L. E.
PR—Frank P. Filer, .. Mercer, Pa.
GM—Frank P. Filer, " "
GS—Frank P. Filer, " "
TR—Harry J. Filer, .. Sharon, Pa.
PA—Harry J. Filer, " "
MS—Harry H. Filer.....Grove City, Pa.
S of H—Mules, 2 Steam loco. and rope; track gauge 37 in.
S of M—Hand.
PP—4 Return tubular boilers, total 435 H. P., 2 pumps.
EMP—157. Last fiscal year output 90,874 tons.

WESTMORELAND COAL CO.
General Office, 224 South Third Street, Philadelphia, Pa.
PR—S. Pemberton Hutchinson, Philadelphia, Pa.
VP 1st—H. C. Adams, " "
TR—2d VP—C. F. Godshall, " "
GS—A. P. Cameron, ... Irwin, Pa.
MM—C. K. Witmer, " "
EM—Geo. Lewis.....Irwin, Pa.

Westmoreland Shaft Mine, Pgh. Seam, 5 ft. 4 in. to 6 ft. thick.
PO—Irwin, Pa. SP—Biddle Station, Pa. CTY—Westmoreland. RR—P. R. R.
MS—E. Whitman.....Irwin, Pa.
S of H—4 Elec. loco., mules and rope; 1,680 H. P., 4 pumps.
PP—14 return tubular boilers, total 1,680 H. P.
EMP—399. Last fiscal year output 476,872 tons.

Criterion Mine, Shaft, Pgh. Seam, 5 ft. 4 in. to 6 ft. 4 in. thick.
PO—Rillton, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—F. P. McClain, ... Rillton, Pa.
S of H—3 elec. locos. and mules.
S of M—Elec. and comp. air mach.
PP—10 return tubular boilers, total 1,500 H. P., 2 compressors and 1 pump.
EMP—506. Last fiscal year output 664,105 tons.

Export Nos. 1 and 2 Mines, Drift, Pgh. Seam, 5 ft. 4 in to 6 ft. 2 in. thick.
PO—Export, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—J. S. McCullen, ... Export, Pa.
S of H—7 Elec. loco.
S of M—Elec. and comp. air mach.
PP—8 return tubular boilers, total 1,200 H. P., and 4 pumps.
EMP—763. Last fiscal year output 917,986 tons.

Magee Mine, Slope, Pgh. Seam, 6½ to 7 ft. thick.
PO—Yukon, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—Fred Spork.....Yukon, Pa.
S of H—4 Elec. loco. and rope.
S of M—Elec. mach.
PP—3 Return tubular boilers, total 900 H. P., and 4 pumps.
EMP—546. Last fiscal year output 701,864 tons.

Southside Mine, Drift, Pgh. Seam.
PO—Irwin, Pa. SP—Same. CTY—Westmoreland. RR—P. R. R.
MS—Howard Jones, ... Irwin, Pa.
EMP—43. Last fiscal year output 45,113 tons.

WESTMORELAND-CONNELLSVILLE COAL & COKE CO.
General Office, J 14 Frick Bldg., Pittsburgh, Pa.
Fort Palmer No. 1 Mine, Drift, Pgh. Seam 6 to 8 ft. thick.
PO—Ligonier, Pa. SP—Fort Palmer Siding, Wilpin Sta., Pa. CTY—Westmoreland. RR—Ligonier Valley.
GM—O. G. Leichliter, Ligonier, Pa.
PA—O. G. Leichliter, " "
EM—S. S. Brownfield, " "
SCO—Fort Palmer Supply Co., Buyer, J. H. Fry, Ligonier, Pa.
S of H—1 Elec. Loco. and mules. Track Gauge 42 in.
S of M—Hand.
PP—2 Atlas Return Tubular boilers, total 300 H.P. 2 Gen. units, 250 volts D.C.
EMP—160. Last fiscal year's output, 172,036 tons.

WESTMORELAND GAS COAL COMPANY.
Hillside Mine; Drift; Pittsburgh Seam, 84 in. thick.
PO—Arona, Pa. SP—Madison, Pa. CTY—Westmoreland; RR—P. R. R., Hempfield Br.
PR—J. L. Kendall, Pittsburgh, Pa.
TR—J. H. Hillman, Jr., " "
GM—W. L. Affelder, " "
MS—H. J. McArdle, ... Arona, Pa.
SCO—Miller Bothers.....Arona, Pa.
S of H—Mules. Coke ovens, 45 Bee Hive. Mine not operating.

WHARTON COAL & COKE COMPANY.
Wharton Mine, Slope; "E" or Upper Freeport Seam, 62 to 78 in. thick.
PO—Coral, Pa. SP—Same. CTY—Indiana. RR—Pennsylvania, Indiana Branch.
PR—Harrison S. Morris,.. Phila, Pa.
TR—Harrison S. Morris, " "
GM—J. Herbert Evans.....Coral, Pa.
GS—J. Herbert Evans, " "
EM—J. Herbert Evans, " "
MS—John Hammond, " "
MM—Andrew Black, " "
EE—Andrew Black, " "
SCO—Coral Supply Co., Buyer, B. F. Harris, Coral, Pa.
S of H—Rope and mules. Track gauge 42 in.
S of M—Hand and 21 Compressed Air Machines.
PP—2 Erie water tubes, 6 return tubular boilers, total 1000 H.P. 2 generators; volt, 250 volts, D.C. 2 air compressors; 1 pump.
EMP—75. Coke ovens, 200 Bee Hive. Last fiscal year output 39,156 tons.
Sales Agent, Pilling & Crane, Philadelphia, Pa.

WHITE-DUGAN COAL CO.
Columbia No. 1 Mine; Slope; "B" Seam, 28 to 36 in. thick.
PO—Osceola Mill, Pa.; SP Same, CTY—Clearfield; RR—P. & S.
PR—George R. Meek, Bellefonte, Pa.
TR—James F. Dugan, Osceola Mills, "
EM—H. S. Shillingford, " "
GM—F. K. White, .. Philipsburg, "
GS—F. K. White, " "
MS—Parick Mostyn, " "
S of H—Rope, run by electric hoist.
S of M—Hand.
PP—2 pumps.
EMP—20. Last fiscal year output 22,260.01 tons.

WHITNEY COAL CO.
Sold to the Maderia-Hill Coal Co.

WHYEL COKE CO.
General Office, Uniontown, Pa.
PR—Harry Whyel, ..Uniontown, Pa.
GM—Harry Whyel, " "
TR—George Whyel, " "
PA—E. E. Ober, " "
CE—T. A. Douthitt, " "
SCO—Sewickley Supply Co., Buyer F. E. Weddell, Yukon, Pa.

Thomas Mine; Drift; Pittsburgh Seam, 96 in. thick.
PO—Smithfield, Pa.; SP—Smiley, Pa.; CTY—Fayette; RR—B. & O., S. & M. Br.
MS—F. Roby, R. F. S., Smithfield, Pa.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—20. Coke ovens, 40 Bee Hive. Last fiscal year output, 30,000 tons.

Yukon Mine; Drift; Pittsburgh Seam, 84 to 108 in. thick. Operate Washery.
PO—Yukon, Pa. SP—Same. CTY—Westmoreland; RR—P. R. R., Yukon Br.
MS—J. A. Abraham, ... Yukon, Pa.
SM—Wm. McKeon, " "
S of H—Mules, rope and 4 Elec. loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—Purchase power. 2 pumps.
EMP—100. Coke ovens, 70 Bee Hive. Last fiscal year output 180,000 tons.

Ellen No. 1 Mine; Slope; Pittsburgh Seam, 84 to 120 in. thick.
PO—Whitney, Pa.; SP—Same; CTY—Westmoreland; RR—P. R. R., Whitney Br.
MS—H. G. Turney.....Whitney, Pa.
S of H—Horses; track gauge 42 in.
S of M—Hand.
PP—Purchase power.
Coke ovens, 40 Bee Hive.

Ellen No. 2; Drift; Pgh. Seam, 9 ft. thick.
..PO—Whitney, Pa. SP—Same. CTY—Wesmoreland; RR—P. R. R., Whitney Br.
MS—H. G. Turney.....Whitney, Pa.
S of H—Horses; track gauge 42 in.
S of M—Hand.
PP—1 Erie return tubular boiler, 150 H.P.
Coke ovens, 50 Bee Hive.

WHYEL, JOHN A. & SON.
Snider Mine, Drift, Pittsburgh Seam, 8 to 9 ft. thick.
PO—Uniontown, Pa. SP—Same. CTY—Fayette.
PR—John A. Whyel, Uniontown, Pa.
TR—John A. Whyel, " "
MS—John A. Whyel, " "
S of H—Horses. Track gauge 30 in.
S of M—Hand.
EMP—9.

WICK, H K & CO.
New Eagle Coal Co.

WIDNOON COAL MINING CO.
General Office, Reynoldsville, Pa.
Widnoon Mine (Armstrong County). Drift, Lower Kittanning Seam, 5½ to 4½ in thick.
PO—Lawsonham, Pa. SP— Same. CTY—Clarion. RR—A. V. Div P. R. R.
PR—F. H. Beck, Reynoldsville, Pa.
TR—W. B. Alexander, " "
GM—J. S. Hammond, " "
PA—J. S. Hammond, " "
MS—F. M. Brown, " "
EM—S. L. Mortimer, Lawsonham, Pa.
MM—Reed Lawson, " "
SCO—Widnoon Supply Co. Buyer, R. B. Meredith, Lawsonham, Pa.
S of H—Rope and mules. Track gauge 42 in.

Continued on Next Page.

S of M—Hand and 8 comp. air machines.
PP—2 Return tubular boilers, tota. 300 H.P. 1 haulage engine, 1 air compressor.
EMP—150. Last fiscal year output, 108,000 tons. Sales agent, J. T. Roberts, Buffalo, N. Y.

WILBUR COAL MINING CO.
Wilbur Mine; Drift; "B" Seam, 54 to 66 in. thick.
PO—Hooversville, Pa.; SP—Same; CTY—Somerset; RR—B. & O.
PR—J. A. Campbell, Philadelphia, Pa.
TR—W. P. Graff, ...Blairsville, Pa.
GM—Telford Lewis, ..Hoovesville, Pa.
GS—Telford Lewis, " "
PA—Telford Lewis, " "
MS—S. B. Jones, " "
EM—R. P. Suppes, " "
MM—W. E. Neveling, " "
EE—W. E. Neveling, " "
SCO—Hooversville Supply Co., Hooversville, Po.
S of H—1 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—Power purchased.
EMP—90. Output 400 tons daily.
Sales Agency, Knickerbocker Fuel Co., New York, N.Y.

WILDWOOD COAL CO.
PO—Butler, Pa.
TR—J. F. Anderson, Butler, Pa.
NOTE—This company has encountered such conditions in the mine as that it was deemed best to cease operations.

WILKEY & FEATHER COKE CO.
General Office, Uniontown, Pa.
Anica Mine, Drift, Pgh. Seam, 9 to 12 ft. thick.
PO—Whitsett, Pa. SP—Same. CTY——Fayette. RR—P. & L. E.
PR—James I. Feather, Uniontown, Pa.
TR—W. H. Wilkey, " "
GM—W. H. Wilkey, " "
PA—J. E. Gainer, " "
EE—E. C. Baker Co., Uniontown, Pa.
MS—James B. Cramer, Whitsett, Pa.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 pump.
EMP—40. Coke ovens, 40 Bee Hive. Last fiscal year output, 25,000 tons Sales agency, J. H. Hillman & Sons Co., Pittsburgh, Pa.

WILLIAMS, DAVID E., & CO.
See Gray Ridge Coal Co., and Glenwood Coal Co.

WILLIAMS, FRANK, & CO.
General Office, Buffalo, N. Y.
Hillville Mine, Drift, Lower Kittanning Seam, 2½ to 3½ ft. thick.
PO—Fredell, Pa. SP—Upper Hillville. CTY—Clarion. RR—P. R. R., Northwestern Division.
S of H—2 Elec. Loco. Track gauge 36 in.
S of M—Hand, Comp. air and Elec. Mach's.
PP—2 Return Tubular boilers, total 250 H.P., 1 Gen. unit, 1 pump, 1 air compressor. Last fiscal year output, 47,300 tons.

WILLIAMS FUEL CO.
Leek Run Mine. CTY—Allegheny; RR—B. & L. E.
GS—John B. Sweeney Park Street, McKeesport, Pa.
No report.

WILLIAMS RUN COAL CO.
Williams Run Nos. 1 and 2 Mines, Drift. Lower Freeport Seam.
PO—Punxsutawney, Pa. SP—Same. CTY—Jefferson. RR—P. R. R., Bellwood Branch
PR—I. B. Williams..Punxsutawney, Pa.
TR—W. S. Blaisdell, " "
GM—W. S. Blaisdell, " "
CE—W. S. Blaisdell, " "
PA—Geo. Sheldon, " "
MS—Jno. Henington, " "
EE—N. S White, " "
S of H—2 elec. locos.
S of M—16 comp. air machines.
PP—1 compressor, 1 pump, 2 boilers.
Sales agent, Berwind White Coal Mng. Co.

WILLS, JOHN.
General Office, Penna. Building, Philadelphia, Pa., 3 mines in Penna., 1 mine in W. Va.
Wills Mines Nos. 1, 2, 3; Slope; Berlin Smokeless Seam, 5 to 7 ft. thick.
PO—Berlin, Pa.; SP—Pine Hill; CTY—Somerset; RR—B. & O., Berlin Br.
GM—John Wills, Philadelphia, Pa.
PA—W. O. Dwyer.....Berlin, Pa.
MS—W. O. Dwyer, " "
S of H—Mules and rope. Track gauge 3½ ft.
S of M—Hand. Sales agent, John Wills, Philadelphia, Pa.

WILSON COAL & COKE CO.
Sold to Pennsy Coal Co.

WINELAND-GILMORE COAL & COKE CO.
General Office, Uniontown, Pa.
Winmore Mine, Drift, Pittsburgh seam, 9 ft. thick.
PO—Smithton, Pa. SP—Same. CTY—Westmoreland. RR—B. & O.
PR—Elias Wineland, Philadelphia, Pa.
TR—R. W. Gilmore, Uniontown, Pa.
GM—R. W. Gilmore, " "
PA—R. W. Gilmore, " "
CE—E. C. Baker, " "
MS—W. H. Watt, Banning, Pa.
MM—Harry Wiltrout, " "
EE—Harry Wiltrout, " "
SCO—Wineland Supply Co. " "
Buyer, M. McDonald, " "
S of H—1 Elec. loco. Track gauge 42 in.
S of M—Hand.
PP—Buy Power.
EMP—40. Coke ovens, 60 Bee Hive Last fiscal year output 50,000 tons.
Sales Agent, R. W. Gilmore, Uniontown, Pa.

WITCHEY & GRIFFITH.
Harrison Mine; Drift, B Seam, 48 to 54 in. thick.
PO—Osceola Mills, Pa.; SP—Same; RR—P. & S.
TR—Frank Witchey..Osceola, Mills, Pa.
MS—Frank Witchey, " "
S of H—Mules; track gauge 30 in.
S of M—Hand.
EMP—12. Last fiscal year output 6,000 tons.

WOODLAND COAL & COKE CO.
Woodland Colliery No. 1, Drift; "D" Seam; 4 ft 2 in. to 3 ft. 4 in. thick.
PO—Spangler, Pa. SP—Same. CTY—Cambria. RR—P. R. R., Susquehanna Branch.
PR—Geo. E. Henderson.
TR—W. Deringer, ... Spangler, Pa.
GM—W. Deringer, " "
GS—W. Deringer, " "
PA—W. Deringer, " "
MS—Chas. E. Jones, " "
S of H—Mules. Track gauge 36 in.
PP—2 Gasoline Pumps.
EMP—60. Last fiscal year output, 50,000 tons.

YOUGHIOGHENY COAL CO.
Florence Mine; Drift; Seam 4 to 5 ft. thick.
PO—Dawson, Pa.; SP—Same; CTY—Fayette; RR—B. & O.
Chairman, H. B. Moore, Dawson, Pa.
TR—R. D. Henry, " "
GM—Frank A. Tarr, " "
GS—Frank A. Tarr, " "
PA—Frank A. Tarr, " "
MS—Jas. H. Welling, " "
CE—Thos. Zimmerman, " "
MM—R. H. Stuler, " "
EE—R. H. Stuler, " "
SCO—Florence Supply Co., " "
S of H—2 Elec. loco.; track gauge 44 in.
S of M—7 Elec. mach.
PP—2 Gen. units, 2 phase, 60 cycles. Power purchased.
EMP—125. Last fiscal year output 150,000 tons.
General Sales Manager, W. N. Stone, 1104 House Bldg., Pittsburgh, Pa.

YOUGHIOGHENY & OHIO COAL CO. THE
General Office, Cleveland, Ohio. 6 mines in Penna., 7 mines in Ohio.
PR—S. H. Robbins,.. Cleveland, O.
TR—W. L. Robinson, " "
Chairman—J. G. Patterson, Pgh., Pa
GS—A. W. Osborne, .. Cleveland, O.
PA—S. L. Thompson, " "
GS—Asst. Jas. Patterson,.. Pgh., Pa
CE—John Rees, " "
EM—W. A. Thomas, " "
MM—W. H. Williams, .. Barton, O.
EE—W. H. Williams, " "
SCO—Patterson & Robbins, Buyer, O. P. Parkin, Pittsburgh, Pa. Sales agent, H. L. Findlay, Cleveland, O.

Manifold Nos. 1 and 2 Mines; Shaft; Pgh. Seam, 5½ ft. thick.
PO—Manifold, Pa. SP—Meadows Lands, Pa. CTY—Washington. RR—P. C. C. & St. L., M. L. & Z. Branch.
MS—N. I. Lauerman, Manifold, Pa.
SM—J. R. Wood.
S of H—2 Elec. loco. and mules. Track gauge 44 in.
S of M—24 Elec. mach.
PP—10 boilers, total 750 H.P. 1 gen. unit, 2 pumps.
EMP—460.

Thompson Mine, Drift, Pgh. Seam, 5½ ft. thick.
PO—Epton, Pa. SP—Snowden, Pa. CTY—Allegheny. RR—B. & O.
MS—Jos. Pearce.....Epton P. O., Pa.
S of H—Mules and elec. Track gauge 44 in.
S of M—6 Elec. mach.
PP—2 boilers, total 300 H.P. 1 gen. unit, 3 pumps.
EMP—228.

Osborne Nos. 1 and 2 Mines; Drift Pgh. Seam, 7 to 8 ft. thick.
PO—Wyano, Pa. SP—Same. CTY—Westmoreland. RR — P. R. R., Hemler Run Branch.
MS—Wm. Davis.....Wyano, Pa.
SB—W. E. Hepler, " "
S of H—14 Elec. loco. and mules. Track gauge 44 in.
S of M—18 Elec. mach.
PP—6 boilers, total 900 H.P. 1 gen. units, 1 pump.
EMP—1145.

Enterprise, Shaft; Pgh. Seam, 8½ ft. thick.
PO—Meadow Lands, Pa. SP—Same. CTY—Washington. RR—P. C. C. & St. L., Chartiers Branch.
MS—Oscar G. Lee, Washington, Pa.
S of H—Elec. and mules. Track gauge 44 in.

YOUGHIOGHENY-PITTSBURGH COAL CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
Saudan Mine; Slope, Pgh. Seam, 70 to 74 in. thick.
PO—Van Voorhis, Pa.; SP—Same; CTY—Washington; RR—P. V. & C.
PR—George W. Theiss....Pittsburgh, Pa.
GM—George W. Theiss, " "
PA—George W. Theiss, " "
TR—R. C. Crawford, " "
CE—Andrews & Southard, " "
MS—David H. Parker..Van Voorhis, Pa.
S of H—2 Elec. loco. and ropes; track gauge 44 in.
S of M—2 elec. mach.
PP—Power purchased
Developing June 20, 1915.

ZENITH COAL CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
Zenith Mine, Slope, L. Freeport Seam. 36 to 48 in. thick.
PO—R. F. D. No. 2, Butler, Pa.; SP—Same; CTY—Butler; RR—B. & L. E., Main Line.
PR—Chas. S. Bygate....Pittsburgh, Pa.
TR—Fred Stover, " "
GM—Fred Stover, " "
GS—Fred Stover, " "
PA—Fred Stover, " "
SCO—Zerith Supply Co.
MS—John Faull.....Butler, Pa.
S of H—Mules; track gauge 34 in.
S of M—2 Elec. mach.
PP—1 Pump; power purchased.
EMP—40.

ZIMMERMAN, D. B.
See Quemahoning Coal Co.

TENNESSEE

For List of Abbreviations See Page 498.

APPALACHIAN WASHED COAL CO.
Abandoned.

BAIRD, LEWIS.
See Elk Valley Blue Gem Coal Co.

BACK CREEK COAL & COKE CO.
See Pruden Coal & Coke Co.

BAKER, L. M. G.
Signal Mtn. Mine.
PO—Oliver Springs, Tenn.; CTY—Roane.
No report.

BAKER MINING CO.
Now Conger Coal Co.

BATTLE CREEK COAL & COKE CO.
Battle Creek Mine, Drift, Battle Creek Seam.
PO—Orme, Tenn. SP—Same. CTY—Marion. RR—N. C. & St. L.
GM—F. P. Thompson, .. Orme, Tenn.
PA—F. P. Thompson, " "
EM—J. C. Brown, " "
MS—Wm. McIntyre, " "
SM—John Sullivan .....Orme, Tenn.
S of H—Rope and mules.
S of M—Comp. air mach. and hand.
PP—3 boilers, total 400 H. P.
EMP—200.

BEAR WALLOW COAL & COKE CO.
Bear Wallow Mine, Drift, Coal Creek Seam. 24 to 48 in. thick.
PO—Caryville, Tenn.; SP—Same; CTY—Campbell; RR—Sou. Ry.
PR—J. L. Boyd.....Knoxville, Tenn.
TR—J. L. Boyd, " "
GM—L. O. Stone, .. Caryville, "
MS—L. O. Stone, " "
PA—David Hendrew, " "
SM—David Hendrew, " "
EE—Chas. Harmon, " "
S of H—4 Elec. loco.; track gauge 36 in.
S of M—Hand and 4 Elec. mach.
PP—1 return tubular boiler, total 150 H. P.., 1 gen. unit, 250 volts D. C., 1 compressor, 1 pump.
EMP—100. Last fiscal year output 40,000 tons. Sales Agent, J. L. Boyd, Knoxville, Tenn.

BIG BRUSHY COAL COMPANY.
Big Brushy Mine, Drift, Jellico Seam, 30 to 48 in. thick.
PO—Petros, Tenn. SP—Same. CTY—Morgan. RR—H. & N. E.
PR—C. C. Moore.. Chattanooga, Tenn.
TR—Geo. M. Price, " "
GM—Geo. M. Price, " "
MS—W. S. Scorbrough.....Petros, Tenn.
SM—W. W. Gibson, " "
EE—Wm. Cureton, " "
S of H—3 elec. locos. Track gauge 36 in.
S of M—3 elec. and 5 Compressed air machines.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 1 compressor, 1 pump.
EMP—125. Last fiscal year output 60,000 tons. Sales agent, Geo. P. Howard, Atlanta, Ga.

BIG MOUNTAIN COAL MINING CO.
Mine worked out.

BLACK DIAMOND COAL CO
General Office, Knoxville, Tenn.
Black Diamond Mines, Nos. 1, 5, and 6. Drifts, Coal Creek Seam. 40 to 48 in. thick.
PO—Coal Creek, Tenn. SP—Same. CTY—Anderson. RR—Sou.
PR—S. B. Luttrell.....Knoxville, Tenn.
TR—Wm. F. Searle, " "
Secy—Wm. F. Searle, " "
GM—L. J. A. Petree, Coal Creek, Tenn.
PA—L. J. A. Petree, " "
MS—John Sharp, " "
SCO—Black Diamond and Beech Grove Stores, Coal Creek, Tenn.
S of H—Mules, rope and elec. loco.
S of M—Hand.
PP—2200 volts A. C., 5 boilers, 625 H. P.
EMP—240. Last fiscal year output 145,000 tons.
Sales Agent, Wm. F. Searle, Knoxville, Tenn.

BLANKENSHIP, BOSS
Baird, B. G., Mine.
PO Elk Valley, Tenn.; CTY—Campbell.
No report.

BLOCK COAL & COKE CO.
General Office, Knoxville Tenn.
Monarch Mine; Drift; Dean Seam, 54 in. thick; Operate Washery.
PO—Block, Tenn.; SP—Same; CTY—Campbell; RR—Sou.
Continued on Next Page.

PR—Robert Wedekind, Louisville, Ky.
TR—W. G. Polk, " "
GM—L. I. Coleman, Knoxville, Tenn.
GS—John P. Gorman, ...Jellico, Tenn.
PA—J. L. Slusher, " "
MS—M. K. Marlow, ...Block, Tenn.
EM—G. D. Cummings, Jellico, Tenn.
SCO—Address this Company, Block, Tenn.
S of H—Mules.
S of M—10 Comp. air mach.
PP—2 Return tubular boilers, total 200 H.P., 1 compressor, 3 pumps.
EMP—120. Last fiscal year outptut 80,000 tons.

BLUE GEM COAL CO.
Blue Gem Mine, Drift, "Blue Gem" Seam 26 in. thick.
PO—Jellico, Tenn. SP—Same. CTY—Campbell. RR—Southern Ry.
PR—Joseph E. Moses...Louisville, Ky.
TR—L. Salomon, " "
GS—Jas. F. MacPherson....Jellico, Tenn.
PA—O. R. Baird, " "
SM—O. R. Baird, " "
MS—Jonathan Jenkins, " "
EM—B. L. Lloyd, " "
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—125. Last fiscal year output 75,000 tons.
Sales agent, Jas. F. Macpherson, Jellico, Tenn.

BON AIR COAL & IRON CO.
GM—L. M. Overton..Nashville, Tenn.
PA—C. Cooper, " "
Bon Air Mines, Drift and Shaft.
PO—Bon Air, Tenn. SP—Same. CTY—White. RR—N. C. & St. L.
S of H—Rope and elec. loco.
S of M—Hand and elec. mach.
EMP—150.

Ravenscroft Mine, Shaft.
PO—Ravenscroft, Tenn. SP—Same. CTY—White. RR—N. C. & St. L.
S of H—Rope.
S of M—Comp. air.
EMP—150.

Eastland Mine, Drift.
PO—Eastland, Tenn. SP—Same. CTY—White. RR—N. C. & St. L.
S of H—Rope.
S of M—Hand.
EMP—150.
Coke ovens—200.

BOTTOMLEE & FAGAN
Hooper Mine, Drift, Hooper Seam 28 in. thick.
PO—Blue Gem, Tenn. SP—Christmas Siding. CTY—Morgan. RR—H. & N. E.
PR—J. A. Fagan....Blue Gem, Tenn.
GM—N. L. Bottomlee, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 pump.
Last fiscal year output 840 tons.

BRIER HILL COLLIERIES CO. (THE)
Brier Hill Mine; Drif; Bon Air No. 2 Seam, 36 to 54 in. thick.
PO—Crawford, Tenn.; SP—Same; CTY—Overon; RR—Tenn. Cent.
PR—S. L. Kamps, New York City, N. Y.
TR—Eben Richards, " "
GM—P. F. Ligon.....Monterey, Tenn.
PA—P. F. Ligon, " "
MS—E. P. Tipton.....Crawford, Tenn.
SM—C. B. Wheeler, " "
EM—J. C. Laird, " "
MM—W. B. Ford, " "
EE—W. B. Ford, " "
CE—B. A. Shiplett....Harriman, Tenn.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—1 Atlas return tubular boiler, total 150 H. P., 1 gen. unit, 250 volts D. C., 3 pumps.
EMP—90. Last fiscal year output 64,000 tons.

BRUSHY MOUNTAIN COAL MINES.
(State mine and operated by convicts.)
Brushy Mt. Mines; Drift, Jellico and Brushy Mt. Seams, 24 to 49 in. thick. Operate washery.
PO—Petros, Tenn; SP—Same; CTY—Morgan RR—H. & N. E.
GM—Floyd L. Ambrister..Petros, Tenn.
PA—W. W. Baird....Nashville, Tenn.
GS—A. W. Evans.....Petros, Tenn.
EM—A. W. Evans, " "
MM—H. Thomas, " "
EE—C. J. Schaeffer, " "
SM—W. W. Sullivan, " "
S of H—12 Elec. loco. and mules; track gauge 36 in.
S of M—2 Elec. mach.
PP—2 Casey-Hedges, 2 Walsh & Weidner, return tubular boilers, total 500 H. P., 3 pumps.
Coke ovens 140. Last fiscal year output 219,000 tons.
Sales Agent, J. T. Pride, Petros, Tenn.

BRYSON MTN COAL & COKE CO.
Bryson Mtn Mine, Drift, Bryson Seam, 54 to 84 in thick.
PO—Bryson, Tenn. SP—Middlesboro, Ky. CTY—Claiborne. RR—L. & N. and Southern.
PR—Tim Cockill....Mahanoy City, Pa.
TR—Tim Cockill, " "
GM—J. H. Keeney.....Bryson, Tenn.
PA—J. H. Keeney, " "
SM—A. B. Keency, " "
MS—W. H. Billingsley, " "
EM—J. C. Richardson..Middlesboro, Ky.
S of H—2 elec. locos. Track gauge 44 in.
S of M—Hand.
PP—4 return tubular boilers, total 600 H. P., 250 volts D. C.
EMP—200. Last fiscal year output 105,000 tons.
Sales agent, J. H. Keeney, Bryson, Tenn

CAMPBELL COAL MINING CO.
General Office, Westbourne, Tenn.
PR—Alex Bonnyman...Knoxville, Tenn.
TR—J. B. Campbell.....Atlanta, Ga.
GS—Jos. Richards ..Westbourne, Tenn.
PA—Chas. Cochran, " "
EM—David Lindamood, " "
EE—H. D. Kivit, " "
SCO—Westbourne Coal Co. Buyer, Chas. Cochran, Westbourne, Tenn.
Sales agent, R. O. Campbell Coal Co., Atlanta, Ga.

Westbourne Mine, Drift, Log Mountain Seam, 43 in thick. Operate Washery.
PO—Westbourne, Tenn.; SP—Habersham, Tenn.; CTY—Campbell; RR—L. & N.
MS—David Watkins ..Westbourne, Tenn.
S of H—6 Elec. loco.; track gauge 36 in.
S of M—7 Elec. and 25 Comp. air mach.
PP—6 return tubular boilers, total 900 H. P., 2 gen. units, 250 to 270 volts D. C., 3 compressors and 15 pumps.
EMP—375. Last fiscal year output 204,848 tons.

Jackson Mine; Drift; Log Mtn. Seam, 43 in. thick.
PO—Westbourne, Tenn.; SP—Habersham, Tenn.; CTY—Campbell; RR—L. & N. and Southern.
S of H—Mules.
S of M—1 Comp. air mach.
PP—3 pumps.
Last fiscal year output 13,333 tons.

Eagan Mine; Drift, Jellico Seam, 38 in. thick.
PO—Eagan, Tenn.; SP—Same; CTY—Campbell; RR—L. & N., Sou.
MS—W. A. Yeager.....Eagan, Tenn.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—2 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 compressors, 5 pumps.
Last fiscal year output 81,915 tons.

CASTLE ROCK COAL & COKE CO.
Drift Mine; Castle Rock Seam, 24 to 40 in. thick.
PO—Whiteside, Tenn.; SP—Same; CTY—Marion; RR—N. C. & St. L., Main Line.
PR—F. W. Dillion, Whiteside, Tenn.
GM—F. W. Dillion, " "
TR—J. E. Clouse, " "
GS—John Higdon, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—35.
Sales Agent, F. W. Dillion, Whiteside, Tenn.

CENTRAL BLUE GEM COAL CO.
Woodward Mine.
PO—Jellico, Tenn. CTY—Campbell.
No report.

CHASKA COAL CO.
Chaska Nos. 3 and 4 Mines; Slopes; Rich Mountain Seam, 28 to 47 in. thick.
PO—Chaska, Tenn. SP—Same. CTY—Campbell. RR—L. & N.
TR—W. M. Sexton.....Chaska, Tenn.
GM—W. M. Sexton, " "
PA—W. M. Sexton, " "
MS—W. M. Sexton. " "
EM—Charlie Crawford..La Follette, Tenn.
S of H—1 elec. loco. and mules. Track gauge 36 in.
S of M—1 elec. mach. and hand.
PP—1 Atlas boiler, 75 H. P., gen. unit 250 volts D. C., and 1 pump.
EMP—119. Last fiscal year output 47,600 tons.
Sales Agency, Superior Coal Co. Knoxville, Tenn.

CHATTANOOGA IRON & COAL CORP.
General Office, Chattanooga, Tenn.
Dunlap Mine, Sewanee Seam, 40 in. thick. Operate washery.
PO—Dunlap, Tenn. SP—Same. CTY—Sequatchie. RR—N. C. & S. & L.
PR—C. E. Buek...Chattanooga, Tenn.
TR—H. B. Lacey, " "
GM—H. B. Lacey, " "
PA—G. H. Jacoway, " "
MS—J. M. Smith.....Dunlap, Tenn.
SM—C. M. Garvich, " "
S of H—Mules, rope and 2 steam locos. Track gauge 36 in.
PP—3 return tubular boilers, total 500 H. P.
EMP—400.
Coke Ovens—168 Bee Hive.

CLAIRFIELD JELLICO COAL CO.
Dift Mine; Jellico Seam, 39 to 48 in. thick.
PO—Clairfield, Tenn.; SP—Same; CTY—Clairborne; RR—Southern & L. N.
PR—P. E. Bennett....Clairfield, Tenn.
GM—P. E. Bennett " "
MS—John Surgener, " "
TR—J. R. Baird, Clairfield, Tenn.
PA—J. R. Baird, " "
EM—B. L. Lloyd.....Jellico, Tenn
S of H—2 Elec. loco.
S of M—3 Elec. mach. and hand.
PP—2 Water Tube Boilers; total, 300 H.P.
Successors to the King Mountain Coal Co.

CLEAR CREEK COAL & LUMBER CO.
In bankruptcy.

CLIFTY CONSOLIDATED COAL CO.
Clifty Mine, Drift.
PO—Clifty, Tenn. SP—Same. CTY—White. RR—N. C. & St. L.
GM—W. B. Young .....Clifty, Tenn.
PA—R. E. McCormac, " "
MS—L. S. Bumgardner, " "
S of H—Mules.
S of M—Hand.
PP—2 boilers, total 205 H. P.
EMP—250. ?

COAL CREEK COAL CO.
Prateville, Tent and Thistle Mines.
PO—Coal Creek, Tenn. CTY—Anderson.
PR—C. C. Camp....Knoxville, Tenn.
MS—G. M. Camp...Coal Creek, Tenn.
State report.

COALFIELD COAL CO.
Bowling Mines, 1 Drift and 1 Slope, Coal Creek Seam, 7 in thick.
PO—Coalfield, Tenn. SP—Same. CTY—Morgan. RR—G. N. O. & T. P., H. & N. E. Div.
PR—J. P. Briscoe.....Knoxville, Tenn.
TR—C. M. Thomas, " "
GM—Harry R. Smith....Coalfield, Tenn.
GS—Harry R. Smith, " "
PA—Harry R. Smith, " "
MS—J. A. Fagan, " "
MM—Ike Miller, " "
CE—J. C. Laird.....Harriman, Tenn.
EM—J. C. Laird, " "
S of H—Rope.
S of M—Hand.
PP—5 water tube boilers, 1 gen. unit, 250 volts A. C., 1 air comp., 6 pumps.
EMP—75. Last fiscal year output 48,000 tons.
Sales agent, J. W. Boyd, Knoxville, Tenn.

CONGER COAL CO.
General Office, Chattanooga, Tenn.
Conger Mine; Drift; Coal Creek Seam, 48 in. thick.
PO—Coalfield, Tenn.; SP—Same; CTY—Morgan; RR—H. & N. E.
PR—John E. Patton, Chattanooga, Tenn.
TR—John E. Patton, " "
GM—John E. Patton, " "
GS—James I. Sweeton, Coalfield "
PA—James I. Sweeton, " "
MS—James I. Sweeton, " "
CE—George Cain, ..Coalmont, "
EM—George Cain, " "
SCO—Address the Company, Coalfield, Tenn.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—1 Elec. mach.
PP—2 Boilers, total 400 H.P., gen. unit 250 volts D.C., 4 pumps.
EMP—40.
Sales Agency, Sewanee Fuel & Iron Co., Chattanooga, Tenn.

CROSS MOUNTAIN COAL CO.
General Office, Knoxville, Tenn.
Cross Mountain Mine, Shaft, Coal Creek Seam, 42 to 48 in. thick.
PO—Briceville, Tenn. SP—Same. CTY—Anderson. RR—Southern.
PR—T. I. Stephenson..Knoxville, Tenn.
GM—T. I. Stephenson, " "
PA—T. I. Stephenson, " "
TR—E. D. Attix, " "
TR—E. D. Altek. " "
GS—P. F. Lynch....Briceville, Tenn.
EM—P. F. Lynch, " "
MS—John M. Woods, " "
SM—J. W. Copeland, " "
MM—W. F. Shutt, " "
EE—W. F. Shutt. " "
S of H—8 Elec. and 1 Staroge battery loco.; track gauge 36 in.
S of M—8 elec. mach.
PP—4 water tube boilers, total 600 H. P., gen. units, 220 volts D. C.
EMP—180. Last fiscal year output 175,000 tons.

DAVIDSON, E. COAL CO
Davidson Mine; Drift; No. 2 or Bon Air Seam, 54 in. thick.
PO—Davidson, Tenn. SP—Wilder. CTY—Fentress; RR—Tenn. Cent., D. H. & G. Br.
GM—R. E. Pope .....Davidson, Tenn.
MS—R. F. Pope, " "
S of H—Mules and 1 Steam loco.
S of M—Hand.
EMP—18. Last fiscal year output 15,000 tons.

DURHAM COAL & IRON CO.
General Office, Chattanooga, Tenn.
3 Mines in Tenn. 1 Mine in Ga.
PR—Chas. B. Eddy..New York, N. Y.
TR—A. Rothbarth, " "
GM—L. T. Wolle....Chattanooga, Tenn.
GS—J. H. Jones.....Soddy, Tenn.
PA—J. H. Jones, " "
EM—Z. V. Myers, " "
EE—Paul Thexster, " "
MM—C. W. McMillan...Pittsburg, Ga.
Sales agent, A. C. Stephenson, Chattanooga, Tenn.

Soddy Mine, Drift, Soddy No. 7 Seam, 24 to 60 in. thick. Operate washery.
PO—Soddy, Tenn. SP—Rathburn, Tenn. CTY—Hamilton. RR—C. N. O. & TP.
SM—T. H. McKown.....Soddy, Tenn.
S of H—2 Elec. loco., mules, rope and gravity; track gauge 36 in.
S of M—Hand.
PP—10 return tubular boilers, total 1,000 H. P., 4 gen. units, 240 volts D. C., 2 air comp. and 12 pumps.
EMP—500. Coke ovens, 211 Bee Hive. Last fiscal year output 167,000 tons.

Big Soddy, Drift, Soddy No. 7 Seam, 24-96 in thick.
PO—Soddy, Tenn. SP—Chamberlain, Tenn. CTY—Hamilton. RR—C. N. & T. P.
SM—T. H. McKown.....Soddy, Tenn.
S of H—Mules, rope and gravity. Track gauge 36 in.
S of M—Hand
PP—1 return tubular boiler, 100 H. P.,
EMP—80. Last fiscal year output 12,000 tons.

Graysville Mine, Drift, Richland and No. 5 Seam, 24 to 60 in. thick.
PO—Graysville, Tenn. SP—Same. CTY—Rhea. RR—C. N. O. & T.P.
SM—Lester Gumsley...Graysville, Tenn.
S of H—2 steam loco., rope and mules. Track gauge 36 in.
S of M—Hand.
PP—4 return tubular boilers, total 400 H. P., 4 engines and 2 pumps.
EMP—120. Coke ovens 75 Bee Hive. Last fiscal year output 42,000 tons.

Durham Mine, Drift, Durham No. 5 Seam, 36-60 in. thick. Operate washery.
PO—Pittsburg, Ga. SP—Durham, Ga. CTY—Walker. RR—C. of Ga.
MS—C. W. McMillan..Pittsburg, Ga.
SM—G. W. Newgent, " "
S of H—Steam and 4 Gasoline locos and mules. Track gauge 36 in.
S of M—Hand.
PP—12 return tubular boilers total 1,000H. P., 4 gen. units, 2 air comp. and 8 pumps.
EMP—551. Coke ovens, 201 Bee Hive. Last fiscal year output 165,000 tons.

EAGLE COAL CO.
Poplar Creek Mine, Drift, Seam 4 ft. thick.
PO—Oliver Springs, Tenn. CTY—Morgan. RR—Sou.
PR—W. D. Richards, Oliver Springs, Tenn.
GM—W. D. Richards, Oliver Springs, Tenn.
MS—W. D. Richards, Oliver Springs, Tenn.
State report.

EAST TENNESSEE COAL CO.
See Kentucky data.

ELK VALLEY BLUE GEM COAL CO.
Elk Valley Blue Gem Mine, Drift, "Blue Gem" Seam, 20 in. thick.
PO—Elk Valley, Tenn. SP—Same. CTY—Campbell. RR—Southern.
PR—Lewis Baird ....Elk Valley, Tenn.
GM—Lewis Baird, " "
MS—J. H. Owens, " "
SM—Bass Blankenship, " "
S of H—Mules. Track gauge 3½ ft.
S of M—Hand.
EMP—10. Last fiscal year output 1,500 tons.
Sales agent, J. R. Barry, Chattanooga, Tenn.

EVANS COAL CO.
Evans Mine, Drift, "Blue Gem" Seam, 22 in. thick.
PO—Jellico, Tenn. SP—Same. CTY—Campbell. RR—Southern
PR—P. F. Garmon, Jr....Hazard, Ky.
TR—J. L. Slusher .....Jellico, Tenn.
PA—J. L. Slusher, " "
MS—J. L. Slusher....Jellico, Tenn.
S of H—Mules. Track gauge 42 in.
S of M—Hand.

FALLS BRANCH COAL CO.
Falls Branch and Powhatan Mines, Drift, Jellico and Blue Gem Seams; 24 to 53 in. thick.
PO—Wooldridge, Tenn. SP—Oswego, Tenn. (Prepay) CTY—Campbell. RR Southern.
PR—P. Wooldridge..Pewee Valley, Ky.
TR—Jas.R.Wooldridge, Wooldridge Tenn.
GM—Jas. R. Wooldridge, " "
GS—Wm. Dinkelaker, " "
MS—J. W. Howe, " "
Wooldridge, Tenn.
PA—J. H. Queener.Wooldridge, Tenn.
SM—J. H. Queener and W. I. White, Wooldridge, Tenn.
EM—B. L. Lloyd .....Jellico, Tenn.
S of H—2 steam, 1 gasoline loco. and mules; track gauge 39 in.
S of M—Hand.
EMP—200. Last fiscal year output 79,543 tons.
Sales agent, Jas. R. Wooldridge, Wooldridge, Tenn.

FENTRESS COAL & COKE CO. (THE)
General Office, Philadelphia, Pa.
Wilder No. 3 Mine, Drift, Bon Air No. 2 Seam, 42 to 60 in. thick.
PO—Wilder, Tenn. SP—Same. CTY—Fentress. RR—T. C. R. R. Co. Crawford Branch.
PR—G. H. Taylor...Philadelphia, Pa.
TR—G. H. Taylor, " "
Cashier—B. L. Peck.
GM—W. J. Nixon..Chattanooga, Tenn.
MS—U. K. Custred.....Wilder, Tenn.
PA—U. K. Custred, " "
EM—U. K. Custred, " "
MF—E. W. Mansfield, " "
SM—G. H. Shacklett, " "
MM—A. W. Long, " "
EE—A. W. Long, " "
S of H—4 elec. locos. Track gauge 3 ft
S of M—3 elec. mach.
PP—2 Erie return tubular boilers, total 250 H. P., 1 gen. unit 220 volts D. C., 1 pump.
EMP—210. Last fiscal year output 126,723 tons.
Sales agent, W. J. Nixon, 522 James Bldg., Chattanooga, Tenn.

FERGUSON MINING CO.
Ferguson Mine, Drift, Sewanee Seam.
PO—Coalmont, Tenn. SP—Same. CTY—Grundy. RR—N. C. & St. L.
GM—J. B. Ferguson..Coalmont, Tenn.
PA—J. B. Ferguson, " "
EM—M. J. Ferguson, " "
MS—D. W. Sartain, " "
SM—J. B. Ferguson, " "
S of H—Mules.
S of M—Hand.

FINLEY COAL CO.
Succeeded by Lusk Coal Mining Co.

FLAT BRANCH COAL CO.
Flat Branch Mine, Drift, Sewanee Seam, 1 to 6 ft. thick.
PO—Tracy City, Tenn. SP—Flat Branch CTY—Grundy. RR—N. C. & St. L., Tracy City Branch.
PR—D. D. H. Thomas...Columbus, O.
TR—W. H. Workman.Tracy City, Tenn.
GM—W. H. Workman, " "
PA—W. H. Workman, " "
MS—W. H. Workman, " "
SM—Robert Bean, " "
S of H—Mules. Track gauge 26 in.
S of M—Hand.
EMP—50. Last fiscal year output 24,000 tons.

FORK RIDGE COAL & COKE CO.
Nos. 1, 2 and 4 Mines, Drift, Mason and Poplar Lick Seam, 4½ to 6 ft. thick. Operate washery.
PO—Fork Ridge, Tenn. SP—Middlesboro, Ky. CTY—Clairborne. RR—L. & N.
PR—C. S. McManus.Fork Ridge, Tenn.
TR—D. G. Hinks, " "
PA—D. G. Hinks, " "
GS—John Lewis.....Fork Ridge, Tenn.
MM—L. Hines, " "
EE—L. Hines, " "
SM—C. S. Collier, " "
CE—J. C. Richardson.Middlesboro, Ky.
S of H—12 elec. loco. Track gauge 42 in.
S of M—3 elec. mach. and hand.
PP—6 water tube boiler, total 900 H. P., 3 gen. units, 250 volts D. C.
EMP—600. Last fiscal year output 348,000 tons.

FOX BLUE GEM COAL CO.
Elk Valley Mine.
PO—Elk Valley, Tenn.; CTY—Campbell.
MS—Jos. Fox, Elk Valley, Tenn.
State report.

FRITTS, G. M.
Davidson Mine, Drift.
PO—Davidson, Tenn. CTY—Fentress.
No report.

GLEN MARY COAL & COKE CO.
Abandoned.

HARRIMAN COAL CO.
Suspended operations.

HICKORY CREEK COAL CO.
Now Red Moon Coal Co.

HIGHCLIFF COAL CO.
General Office, Knoxville, Tenn.
Highcliff Mine, Drift.
PO—Pruden, Tenn. SP—Same. CTY—Claiborne. RR—Southern Ry. and L. & N., Clearfork Branch.
PR—Alex Bonnyman..Knoxville, Tenn.
GM—Alex Bonnyman, " "
TR—J. B. Campbell ....Atlanta, Ga.
GS—Joseph Richards..Westbourne, Tenn.
MS—Jas. Carmack.....Pruden, Tenn.
SM—Chas. Cochran..Westbourne, Tenn.
S of M—Pick mining.
Sales Manager, D. C. Campbell, Knoxville, Tenn.

HIGHLAND COAL & LUMBER CO.
Highland Mine Drift, Bon Air Seam, 36 to 60 in. thick.
PO—Davidson, Tenn.; SP—Wilder, Tenn. CTY—Fentress; RR—Tenn. Cent.; Wilder Br.
PR—W. V. Davidson....Nashville, Tenn.
GM—J. R. Greene, " "
TR—L. Clark.....Davidson, Tenn.
SCO—Address the Company. " "
PA—George W. Forgy..Cookplace, Tenn.
EM—O. P. Pile.....Cowan, Tenn.
S of H—Mules.
S of M—Hand.
PP—2 pumps.
EMP—50. Last fiscal year output 67,000 tons.

ITALIAN BLUE GEM COAL CO.
Italian Mine, Jellico Seam, 37 to 38 in. thick.
PO—Newcomb, Tenn. SP—Same. CTY—Campbell. RR—Southern, West Side Branch.
PR—A. B. Baird .....Jellico, Tenn.
TR—C. O. Baird, " "
CE—D. C. Barker, " "
EM—D. C. Barker, " "
GM—Peter Zechini ....Newcomb, Tenn.
PA—Peter Zechini, " "
GS—Thos. Zecaint, " "
S of H—Mules. 1 comp. air loco. Track gauge 36 in.
S of M—Hand., 4 mining mach.
PP—Boilers, total 150 H. P.

JACKSON BROS. COAL CO.
Jackson Mine, Drift, Coal Creek Seam.
PO—Oliver Springs, Tenn. SP—Same. CTY—Morgan. RR—Southern.
GM—Thos. Jackson.Oliver Springs, Tenn
PA—Thos. Jackson, " "
MS—Alex Jackson, " "
S of H—Mules.
S of M—Hand.
EMP—12.

JELLICO CANNEL COAL CO.
General Office, Massillon, Ohio.
Drift Mine; Cannel Seam, 32 to 40 in. thick.
PO—Newcomb, Tenn. SP—Same. CTY—Campbell. RR—Southern.
PR—Thos. N. Nordue....Chicago, Ill.
TR—F. F. Taggart .....Massillon, O.
GM—W. H. Jenkins...Newcomb, Tenn.
PA—W. H. Jenkins, " "
SM—W. H. Jenkins, " "
CE—D. C. Barker....Jellico, Tenn.
EM—D. C. Barker, " "
S of H—Mules, rope, gravity and 1 steam loco. Track gauge 36 in.
S of M—8 comp. air mach.
PP—8 Compressors, 2 pumps.
Note—Mine not operating at present.

JONES H. M. COAL CO.
Jameson Mine, Drift, Blue Gem Seam.
PO—Jellico, Tenn. SP—Same. CTY—Campbell. RR—Sou.
GM—H. M. Jones.....Jellico, Tenn.
PA—Fred Adkins, " "
MS—Geo. Snoderly, " "
EM—G. D. Cummings, " "
S of H—Elec. loco. and mules.
S of M—Hand.
EMP—100.

KENTUCKY-TENNESSEE COAL CO.
Fresno Mine; Drift; Rich Mtn. Seam, 40 to 50 in. thick.
PO—Cupp, Tenn.; SP—Fresno, Tenn.; CTY—Campbell; RR—L. & N., Main Line.
PR—J. R. Barnes, Chattanooga, Tenn.
TR—J. R. Barnes, " "
GM—Sol. L. Smith, Williamsburg, Ky.
MS—Sol. L. Smith, " "
PA—Bert Facinola, ...Cupp, Tenn.
EM—D. C. Barker, ...Jellico, Tenn.
S of H—Mules.
S of M—Hand.
EMP—65. Output 30,000 tons.
Sales Agency, Royal Con. Coal Co., Knoxville, Tenn.

KIMBERLEY COAL CO.
Cupp Mine; Drift.
PO—Cupp, Tenn.; SP—Kimberley, Tenn.; CTY—Campbell; RR—L. & N.
PR—Geo. P. Chandler....Cupp, Tenn.
GM—Geo. P. Chandler, " "
MS—G. R. Brooks, " "
S of H—4 Elec. loco.; track gauge 42 in.
S of M—Hand and 5 Elec. mach.
PP—2 Boilers, oal 300 H. P., 1 gen. unit, 250 volts D. C., and 1 pump.
EMP—100.

KING MOUNTAIN COAL CO.
Now Clairfield Jellico Coal Co.

KNOX MINING CO.
Roane Iron Co., Colliery; Slope; Sewanee Seam.
PO—Rockwood, Tenn.; SP—Same; CTY—Roane RR—C. N. O. & T. P. Operate washery.
PR—E. O. Wells.....Rockwood, Tenn.
GM—E. O. Wells, " "
TR—C. F. Millican, " "
Secy—C. F. Millican, " "
GS—W. T. Richards, " "
EM—J. T. Staples, " "
MM—E. W. Morris, " "
SCO—Roane Iron Co. Store Rockwood, Tenn.
S of H—4 Gasoline loco., mules and rope; track gauge 32 in.
S of M—Hand.
PP—6 Boilers, 2 compressors, 4 pumps.
EMP—285. Last fiscal year output 159,659 tons. Coke ovens 375 Bee Hive.
Entire output sold to Roane Iron Co.
Formerly the Old. Mine of the Roane Iron Co.

LA FOLLETTE COAL, IRON & RY. CO.
General Office, La Follette, Tenn.
Receiver, Neil Robinson, La Follette, Tenn.
TR—W. H. McGee....La Follette, Tenn.
GM—G. M. Shoemaker, " "
PA—G. M. Shoemaker..La Follette, Tenn.
EM—A. D. Macfarlane, " "
SCO—Co-operative Store Co., La Follette, Tenn.

Rex No. 1 Mine; Slope; Coal Creek Seam; 36 to 48 in. thick.
PO—La Follette, Tenn. SP—Same. CTY—Campbell. RR—Sou., L. & N., L. C. I. & Ry. Co., Branch.
MS—G. W. Card....La Follette, Tenn.
S of H—6 Gasoline loco. and mules. Track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 300 H. P., 1 compressor and 2 pumps.
EMP—350. Last fiscal year output 218,937 tons.

Gem Mine; Drift Jordan Seam; 36 to 48 in. thick.
PO—Peabody, Tenn.; SP—Roosevelt, Tenn.; CTY—Campbell RR—L. & N.; Cinci. & Atlantic Br.
MS—J. E. Hendren....Peabody, Tenn.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—4 Elec. mach. and hand.
PP—3 return tubular boilers, total 450 H. P., 2 gen. units, 275 volts D. C., 2 pumps.
EMP—250. Last fiscal year output 145,398 tons.

LITTLE BRUSHY COAL CO.
General Office, Atlanta, Ga.
Little Brushy Mine, Drift, 34 to 42 in. thick.
PO—Stephens, Tenn. SP—Same. CTY—Morgan. RR—Harriman & N.E.
PR—R. O. Howard .....Atlanta, Ga.
TR—E. M. Seabrook, " "
PA—E. B. Patton ....Stephens, Tenn.
SM—E. B. Patton, " "
MS—J. C. Harton, " "
CE—A. H. Wood .....Petros, Tenn.
S of H—Mules and gravity. Track gauge 36 in.
S of M—5 comp. air mach.
PP—1 water tube boiler, 1 comp., 2 pumps.
EMP—60. Last fiscal year output 35,000 tons.
Sales agent, Seabrook & Howard, Atlanta, Ga.

LUSK COAL MINING CO.
Atpontley Mine; Drift; Sewanee Seam. 18 to 44 in. thick.
PO—Atpontley, Tenn; SP—College, Tenn. CTY—Bledsoe; RR—N. C. & St. L
PR—William G. Lusk...Atpontley, Tenn.
TR—William G. Lusk, " "
GM—William G. Lusk, " "
PA—William G. Lusk, " "
MS—William G. Lusk, " "
EM—William G. Lusk, " "
MM—Chas. Sisson, " "
S of H—Mules.
S of M—Hand.
PP—Boiler 25 H. P.
EMP—12.
Output 75 tons daily.
Will sart in full in a few days; June 30.
Successors to the Finley Coal Co.

MINERSVILLE COAL CO.
Buck Mountain Mine.
PO—Piess, Tenn. CTY—Anderson.
MS—J. W. Groans.
State report.

MINGO COAL & COKE CO.
Mingo No. 5 Mine, Drift, Poplar Lick Seam, 52 in. thick.
PO—Hartranft, Tenn. SP — Mingo, Tenn. CTY—Claiborne. RR—L. & N., Sou.
PR—R. L. Ralston..Hartranft, Tenn.
PA—R. L. Ralston, " "
MS—Z. T. Ralston, " "
S of H—1 Elec. loco. and mules; track gauge 42 in.
S of M—6 comp. air mach. and hand.
PP—2 return tubular boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 1 comp. and 4 pumps.
EMP—60. Last fiscal year output 70,872 tons.

MONTLAKE COAL CO.
General Office, Chattanooga, Tenn.
Montlake Mine.
PO—Montlake, Tenn. SP—Same. CTY—Hamilton. RR—C. N. O. & T. P.
GM—G. F. Meehan Chattanooga, Tenn.
PA—P. A. Brawner, " "
EM—Thos. Dagnan ...Montlake, Tenn.
MS—George Dagnan, " "
SM—T. S. McGlahon, " "
S of H—Rope.
S of M—Hand.
PP—4 boilers, total 450 H. P.

NEW CARYVILLE COAL CO.
Caryville Mine, Drift, Red Ash Seam, 2½ to 4 ft. thick.
PO—Caryville, Tenn. SP—Same. CTY—Campbell. RR—Southern.
PR—W. B. Croley..Williamsburg, Ky.
TR—Zeb Ward, " "
GM—J. L. Williams..Caryville, Tenn.
GS—J. L. Williams, " "
PA—J. L. Williams, " "
Asst M—J. L. Williams, " "
MS—J. W. Duncan, " "
SM—C. C. Brown, " "
S of H—Mules and 2 elec. locos. Track gauge 36 in.
S of M—2 elec. mach.
PP—2 water tube boilers, total 200 H. P., 250 volts D. C., 2 pumps.
EMP—200. Last fiscal year output 70,000 tons.

NEW ETNA COAL CO.
Kelly Mine; Drift, No. 2 Raccoon Mtn. Seam, 36 in. thick.
PO—Whiteside, Tenn.; SP—Etna Mines, Tenn.; CTY—Marion; RR—N. C. & St. L.
PR—S. R. Golibart....Whiteside, Tenn.
GM—S. R. Golibart, " "
TR—J. V. Golibart, " "
PA—J. V. Golibart, " "
MS—J. C. Foster, " "
MM—Adam Mills, " "
SCO—New Etna Coal Co., Commissary, Buyer, J. V. Golibart, Whiteside, Tenn.
S of H—3 steam loco. and mules.
S of M—Hand.
PP—7 Return tubular boilers, 1 compressor, 3 pumps.
EMP—200. Last fiscal year output 24,000 tons.

OLIVER COAL CO.
Oliver Mine, Drift, Coal Creek Seam, 5 ft. thick.
PO—Oliver Springs, Tenn. SP—Same. CTY—Roane. RR—Southern.
PR—W. D. Richards.Oliver Spngs, Tenn
GM—W. D. Richards, " "
MS—W. D. Richards, " "
TR—John R. Richards, " "
PA—John R. Richards, " "
SM—John R. Richards, " "
S of H—Mules.
S of M—Hand.
EMP—15.

OVERTON COAL & COKE CO.
Overton Mine, Drift. "Bon Air No. 2" Seam, 4½ to 6 ft. thick.
PO—Davidson, Tenn. SP—Wilder, Tenn. CTY—Overton; RR—T. C.
PR—W. R. Officer....Livingston, Tenn
TR—Irving Allred.....Allred, Tenn.
GM—Irving Allred, " "
PA—P. M. Allred....Davidson, Tenn.
MS—P. M. Allred, " "
EM—O. P. Pile.....Cowan, Tenn.
SCO—Speck & Smith Bros. Buyer, P. M. Speck, Davidson, Tenn.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 boiler, total 16 H. P., 3 pumps.
EMP—27. Last fiscal year output, 12,000 tons.

PEACOCK COAL & COKE CO.
General Office, Lebanon, Pa.
Peacock No. 1 Mine, Drift, "Bon Air No. 2" Seam, 34 to 36 in. thick.
PO—Monterey, Tenn. SP—Same. CTY—Overton; RR—T. C. Crawford Branch.
PR—J. T. Odum .....Lebanon, Pa.
TR—J. C. Lusk ....Monterey, Tenn.
PA—J. C. Lusk, " "
MS—J. C. Lusk, " "
SM—J. C. Lusk, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
Sales agent, J. C. Lusk, Monterey, Tenn

PERKINS BRANCH COAL CO.
Perkins Branch Mine, Drift, "Blue Gem" Seam, 20 in. thick.
PO—Elk Valley, Tenn. SP—Same. CTY—Campbell. RR—Southern.
PR—J. F. Baird....Elk Valley, Tenn.
TR—F. M. Baird, " "
PA—F. M. Baird, " "
SM—F. M. Baird, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
Last fiscal year output 3,000 tons.

PETROS MINING CO.
Petros Mine, Drift, Brushy Mtn Seam, 36 to 60 in. thick.
PO—Petros, Tenn. SP—Same. CTY—Morgan. RR—H. & N. E.
PR—A. H. Wood .....Petros, Tenn.
GM—W. S. Wood.....Petros, Tenn.
PA—W. S. Wood, " "
MS—Sam Howard, " "
S of H—Rope, Gravity and 1 Gasoline loco.; track gauge 36 in.
S of M—Hand and 5 Comp. air mach.
PP—1 water tube boiler, total 150 H. P., 1 comp., 1 pump.
EMP—7. Last fiscal year output, 15,000 tons.

PIEDMONT COAL & COKE CO.
Piedmont Mines Nos. 2 and 4, Drift, Coal Creek Seam, 2 to 72 in.
PO—Oliver Springs, Tenn. SP—Same. CTY—Anderson. RR—L. & N., Sou.
PR—E. F. Buffat.Oliver Springs, Tenn.
GS—E. F. Buffat, " "
EM—E. F. Buffat, "
PA—W. A. Boy, " "
MM—G. B. Carden, " "
TR—S. T. Buffat....Knoxville, Tenn.
SCO—Piedmont Store. Buyer, W. A. Boy, Oliver Springs, Tenn.
S of H—Mules and rope. Track gauge 36 in.
S of M—2 comp. air mach. and hand.
PP—1 boiler, 80 H. P., 1 comp. and 3 pumps.
EMP—90. Last fiscal year output 42,000 tons.
Sales agent, H. T. Hackney Coal Co., and Cherokee Coal Co., Knoxville, Tenn.

PINE KNOT COAL CO.
Out of business.

POLK CREEK COAL CO.
See Finley Coal Co., Chattanooga, Tenn.

PROCTOR COAL CO.
1 Mine in Tennessee, 2 Mines in Kentucky.
Indian Mountain Mine, Drift Jellico Seam, 3½ ft. thick.
PO—Red Ash, Ky.; SP—Jellico, Tenn.; CTY—Campbell; RR—L. & N., Sou.
PR—Chas. Finley...Williamsburg, Ky.
GM—Chas. Finley, " "
TR—F. W. Finley, " "
GS—Philip Francis.....Jellico, Tenn.
PA—Philip Francis, " "
EE—Thomas Francis, " "
EM—Louis Francis.....Red Ash, Ky.
SM—George W. Davenport, " "
S of H—2 Elec. loco.; track gauge 40 in.
S of M—4 Elec. mach. and hand.
PP—Power from Central Station at Proctor Mine, 2 pumps.
EMP—200. Last fiscal year output 120,000 tons.

PRUDEN COAL & COKE CO.
General Office, Knoxville, Tenn.
Pruden Mine, Mingo Seam 60 to 120 in. thick; operate washery.
PO—Pruden, Tenn. SP—Same. CTY—Clairborne; RR—L. & N., Southern
PR—Thomas Pruden...Knoxville, Tenn.
GM—Thomas Pruden, " "
TR—Joseph P. Gant, " "
Asst GM—C. A. Griffith, Pruden, Tenn.
PA—Chas. Townsend, " "
SM—Chas. Townsend, " "
MS—R. C. Speaks, " "
MM—L. L. Page, " "
EE—D. G. Winchester, " "
EM—J. C. Richardson, Middlesboro Ky.
S of H—Mules and 8 Elec. loco.; track gauge 44 in.
S of M—Hand and 3 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 2 gen. units, 2300 volts, A. C. 3 phases and 60 cycles, 5 pumps.
EMP—200. Last fiscal year output 251,000 tons.

PRUDENTIAL COAL CO.
Prudential Mine, Drift, Coal Creek Seam 44 in. thick.
PO—Oliver Springs, Tenn.; SP—Middle Creek, Tenn.; CTY—Morgan; RR—Sou., Big Waterloo Br.
PR—E. B. Booth..Oliver Springs, Tenn.
TR—J. L. Boyd.....Knoxville, Tenn.
GM—J. L. Boyd, " "
PA—M. A. Duggins, Oliver Springs, Tenn.
SM—M. A. Duggins, " "
MS—R. S. Davis, " "
SCO—Prudential Coal Co. Store.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—45. Last fiscal year output, 29,115 tons. Sales Agent, J. I. Boyd, Knoxville, Tenn.

RED ASH COAL CO.
Red Ash Mine; Drift; Red Ash Seam; 38 to 48 in. thick; operate washery.
PO—Caryville, Tenn.; SP—Red Ash, Ky.; CTY—Campbell; RR—Southern; Castor Div.
PR—C. M. Moore.....Caryville, Tenn.
TR—G. E. Moore, " "
GM—C. M. Moore, " "
PA—G. E. Moore, " "
MS—T. D. Richards, " "
MM—C. M. Andrews, " "
SM—C. M. Moore, " "
CE—G. W. Wending, " "
S of H—5 Elec. loco.; track gauge 42 in.
S of M—6 Elec. machines.
PP—Water tube boilers, total H.P. 360 2 gen. units, 2300 volts A. C. and 250 D. C.
EMP—150. Last fiscal year output, 75,000 tons.
Sales Agency, Red Ash Coal Co.

RED MOON COAL CO.
Old Hickory Mine; Slope; White Oak Seam, 30 to 33 in. thick.
PO—Morley, Tenn.; SP—Same; CTY—Campbell RR—L. & N.
PR—J. L. Hefferman, Morley, Tenn.
TR—J. L. Hefferman, " "
GM—Perry Cross, " "
GS—Perry Cross, " "
PA—Perry Cross, " "
MS—Perry Cross, " "
CE—David Schuk.
S of H—1 Comp. Air and 2 Steam loco. and mules; track gauke, 36 in.
S of M—3 Comp. Air. Mach.
PP—1 Water Tube Boilers, 125 H.P.; 1 Compressor, 1 pump.
EMP—125.
Output, 3 cars per day.
Sales Agency, Clinch River Coal Co.
Successors to the Hickory Creek Coal Co.

RELIANCE COAL & COKE CO.
Reliance Mines No. 1, 2 and 3; Drift; Mingo Seams, 60 in. thick.
PO—Hartranft, Tenn. SP—Same. CTY—Clairborne; RR—L. & N. and Sou.
PR—G. W. Whiteman....Phila., Pa.
TR—Daniel Cooper Swab.Hartranft, Tenn
GM—Daniel Cooper Swab, " "
GS—Daniel Cooper Swab, " "
PA—Daniel Cooper Swab, " "
EM—Malcolm Smith, " "
SM—A. H. Wright, " "
S of H—Rope; track gauge 36 and 42 in.
S of M—Hand.
PP—Boilers, total 200 H. P.
EMP—200 to 250.

REMY COAL CO.
Drift Mine, Rich Mtn. Seam, 28 to 33 in. thick.
PO—Gatliff, Tenn.; SP—Habersham, Tenn.; CTY—Campbell; RR—L. & N.
PR—A. J. Queener....Knoxville, Tenn.
GM—A. J. Queener, " "
PA—G. F. Rector.....Gatliff, Tenn.
SM—G. F. Rector, " "
MS—D. J. Ridings, " "
S of H—Mules.
S of M—7 Comp. air mach. and hand.
PP—Boiler 150 H. P., 1 compressor, 8 pumps.

RICH MOUNTAIN COAL & COKE CO.
General Office, Coal Creek, Tenn.
Rich Mountain Mine, Drift; Rich Mountain Seam; 32 in. to 48 in. thick.
PO—Bennett, Tenn.; SP—Habersham, Tenn.; CTY—Campbell; RR—L. & N., Knoxville Div.
PR—E. M. Beasley.....Bennett, Tenn.
TR—E. M. Beasley, " "
GM—E. M. Beasley, " "
MS—E. M. Beasley, " "
PA—Chas. Stapleton, " "
SM—Chas. Stapleton, " "
S of H—Rope; track gauge 42 in.
S of M—Hand and 7 comp. air mach.
PP—3 Water tube boilers, total 180 H. P.; 1 compressor, 2 pumps.
EMP—150. Last fiscal year output 59,600 tons.
Sales Agency, Superior Coal Co.

ROANE IRON CO.
Leased to Knox Mining Co.

ROCK SPRINGS COAL CO.
See Turley Coal Co.

ROYAL COAL & COKE CO.
See Royal Consolidated Coal Co.

ROYAL CONSOLIDATED COAL CO.
General Office, Knoxville, Tenn.
PR—H. S. Pless.....Knoxville, Tenn.
TR—H. H. Pless, " "
GM—Geo. P. Chandler, " "
EM—Geo. Wendling...Coal Creek, Tenn.
EE—H. D. Brock.....Briceville, Tenn.
Sales Manager—F. J. Satterfield.

Tennessee Mine; Drift Coal Creek Seam, 42 to 54 in. thick.
PO—Briceville, Tenn.; SP—Same; CTY—Anderson; RR—Sou.
MS—J. W. Goans.....Briceville, Tenn.
S of H—5 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—3 Return tubular boilers, total 300 H. P., 1 pump.
EMP—300. Last fiscal year ouput 100,000 tons.

Cambria Mine; Drift; Coal Creek Seam, 36 to 54 in. thick.
PO—Coal Creek, Tenn; SP—Same; CTY—Anderson RR—Sou.
MS—J. M. Stonecipher, Coal Creek, Tenn.
SM—C. C. Pless, " "
S of H—5 Elec. loco.; track gauge 36 in.
S of M—2 Elec. mach.
PP—3 Return tubular boilers, total 300 H. P., 1 gen. unit.
EMP—125. Last fiscal year output 50,000 tons.
Successors to Royal Coal & Coke Co.

SEWANEE FUEL & IRON CO.
General Office, Chattanooga, Tenn.
Coalmont Mine 5, Drifts, Sewanee Seam, 3 ft. 3 in. to 6 ft. thick; operate washery.
PO—Coalmont, Tenn.; SP—Same; CTY—Grundy; RR—N. C. & St. L., Cowan Branch.
PR—John E. Patton, Chattanooga, Tenn.
TR—John E. Patton, " "
GM—John E. Patton, " "
Secy—J. M. Adams, " "
GS—W. W. Jones.....Coalmont, Tenn.
PA—Dave Henniger, " "
SM—Dave Henniger, " "
EM—George Cain, " "
MM—John Harrison, " "
S of H—1 Gasoline and 1 comp. air loco. and mules; track gauge 26 in.
S of M—Hand.
PP—2 Walsh & Weidner water tube boilers, total 120 H. P., 4 pumps.
EMP—325; coke ovens 90. Bee Hive. Last fiscal year output 156,000 tons.
Sales Agent, G. W. Stephenson, Chattanooga, Tenn.

SIGNAL MOUNTAIN COAL CO.
General Office, Knoxville, Tenn.
Signal Mountain Mine; Drift; Coal Creek Seam, 42 in. thick.
PO—Oliver Springs, Tenn.; SP—Same; CTY—Morgan; RR—Sou.
PR—L. M. G. Baker, Knoxville, Tenn.
GM—L. M. G. Baker, " "
PA—L. M. G. Baker, " "
TR—Mr. Griffis, " "
GS—Sam Price, Oliver Springs, Tenn.
SCO—John Booth, " " "
S of H—Mules.
Sales Agency, L. M. G. Baker, Knoxville, Tenn.

SOUTHERN CLAY MFG CO.
General Office, Chattanooga, Tenn.
1 Mine in Tennessee and 1 Mine in Alabama.
Robbins Mine, Drift, Glen Mary Seam, 28 to 40 in. thick.
PO—Robbins, Tenn.; SP—Same; CTY—Scott; RR—Q. & C.
PR—W. M. Lasley, Chattanooga, Tenn.
TR—W. C. Brown, " "
PA—W. C. Brown, " "
GM—J. D. Harvey, " "
GS—E. F. King.....Robbins, Tenn.
MS—Thomas Reynolds, " "
SM—J. F. Hargrove, " "
S of H—Mules; track gauge 36 in.
S of M—2 Elec. mech.
Mine coal for their own use.

SOUTHERN COAL & COKE COMPANY
General Office, Williamsburg, Ky.
Regal Mine, Drift; Jordon Seam; 42 to 54 in. thick.
PO—Gatliff, Tenn.; SP—Cotula, Tenn.; CTY—Campbell; RR—L. & N., Main line. Knoxville Division.
PR—A. Gatliff.....Williamsburg, Ky.
TR—E. C. Mahon....Knoxville, Tenn.
GM—N. B. Perkins..Williamsburg, Ky.
MS—A. V. Brown, " "
PA—L. F. Gatliff.....Gatliff, Tenn.
SM—L. F. Gatliff, " "
CE—G. D. Cummings..Jellico, Tenn.
EM—G. D. Cummings, " "
S of H—Mules and 2 gasoline loco.; track gauge 36 in.
S of M—Hand.
EMP—150. Last fiscal year output 85,000 tons.
Sales Agent, address the Co.

STANDARD JELLICO COAL COMPANY.
Standard Mine, Drift, "Jellico" Seam, 34 to 72 in. thick.
PO—Clairfield, Tenn.; SP—Same; CTY—Claiborne; RR—L. & N., Sou.
PR—Chas. F. Eager..Clearfield, Tenn.
TR—Chas. F. Eager, " "
GM—Chas. F. Eager, " "
MS—L. R. Eager, " "
PA—L. R. Eager, " "
SM—L. R. Eager, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—150. Last fiscal year output 50,000 tons. Sales Agent, Standard Jellico Coal Co.

STANLEY COAL CO.
Out of business.

STATE OF TENNESSEE COAL MINES.
See Busby Mt. Mines, Petros, Tenn.

STERLING COAL AND COKE CO.
Sterling Mine.
PO—Manring, Tenn.; SP—Middlesboro, Ky. CTY—Claiborne. RR—L. & N., Sou.
GM—C. S. McManus..Manring, Tenn.
PA—C. B. Finley, Jr., " "
MF—W. T. Robinson, " "
S of H—Elec. locomotives.
S of M—Hand and elec. machines.
PP—4 Boilers, 600 H. P., gen. unit, 250 volts D. C.
EMP—300.

SUN COAL CO.
Sun & Pewee Mines; Drift; Block Seam, 28 to 72 in. thick.
PO—Caryville, Tenn.; SP—Same; CTY—Campbell; RR—Sou.
PR—A. G. Hill.....Beaver Dam, Wis.
TR—M. A. Jacobs, " "
Secy—A. A. Fisher..Caryville, Tenn.
GM—J. H. Bowling, " "
GS—J. H. Bowling, " "
MS—W. L. Card, " "
PA—E. L. Guynes, " "
SM—E. L. Guynes, " "
EM—H. S. Russell, " "
MM—W. R. Bomar, " "
CE—Myer & Whaley, Knoxville, Tenn.
EE—J. A. Summer.....Jellico, Tenn.
S of H—2 Elec. loco., and mules; track gauge, 36 in.
S of M—2 Elec. mach. and hand.
PP—2 Walsh & Weidner return tubular boilers total 300 H. P., gen. unit, 2200 volts A. C., 3 phase, 60 cycles and 2 pumps.
EMP—220. Last fiscal year output 102,500 tons. Sales Agency, Southern Coal & Coke Co., Knoxville, Tenn.

TENNESSEE COAL CO. (THE)
Tennessee and Middle Ridge Mines; Drifts; Coal Creek Seam.
PO—Briceville, Tenn.; SP—Coal Creek; CTY—Anderson; RR—Sou.
GM—Geo. P. Chandler.Knoxville, Tenn.
EM—H. H. Braden..Briceville, Tenn.
MS—H. H. Braden, " "
SM—Harry R. Smith, " "
S of H—Elec. locomotives.
S of M—Hand and comp. air machines.
PP—3 Boilers, 300 H. P., gen. units, 250 volts D. C., 1 comp.
EMP—150

TENNESSEE COAL, IRON & RAILROAD CO.
General Office, Birmingham, Ala.
1 Mine in Tenn., 20 Mines in Ala.
Whitwell Mine; Drift; Sewanee Seam, 40 in. thick.
PO—Whitwell, Tenn.; SP—Same; CTY—Marion; RR—N. C. & St. L.
PR—George G. Crawford, Birmingham, Ala.
TR—L. T. Beecher, " "
GM—F. H. Crockard, " "
PA—Geo. H. Gray, " "
SM—Geo. H. Gray, " "
CE—Robert Hamilton, " "
EM—C. G. Owen, " "
MM—Edwin Ball, " "
MS—W. A. Meagher, Whitwell, Tenn.
Chief Elec—A. F. Elliott, Ensley, Ala.
S of H—Elec. loco.
S of M—Hand.
PP—Gen. units 250 volts, D. C.
EMP—369. Coke ovens, 100 Bee Hive; Last fiscal year output, 261,105 tons.
Gen. Mgr. of Sales, F. A. Burr, Birmingham, Ala.

TENNESSEE CONSOLIDATED COAL CO.
East Fork, Henley, Lone Rock, Ramsey, Reid Hill and Werner Mines: Drift; Sewanee Seam, 36 in. thick.
PO—Tracy City, Tenn. SP—Same. CTY—Grundy; RR—N. C. & St. L.
PR—E. L. Hampton..Tracy City, Tenn.
GM—E. L. Hampton, " "
TR—G. M. Thorogood, " "
PA—G. M. Thorogood, " "
GS—R. B. Roberts, " "
EM—B. W. Faust, " "
MM—I. H. Roberts, " "
SM—G. E. Bryan, " "

Continued on Next Page.

TENNESSEE CON COAL CO.—Continued.
S of H—3 Gasoline loco. and mules; track gauge 26 in.
S of M—Hand.
EMP—647. Coke ovens, 300 Bee Hive. Last fiscal year output 302,405 tons.

TENNESSEE-JELLICO COAL CO.
General Office, Knoxville, Tenn.
Anthras Mine, Drift, Jellico Seam 40 in. thick.
PO—Anthras, Tenn.; SP—Same; CTY—Campbell; RR—Southern & L. & N.
PR—Robert Wedekind....Louisville, Ky.
TR—W. G. Polk, " "
GM—L. I. Coleman..Knoxville, Tenn.
GS—John P. Gorman..Jellico, Tenn.
PA—J. L. Slusher, " "
SM—J. L. Slusher, " "
MS—Joe Smiddy, " "
EM—G. D. Cummings, " "
MM—A. Lavely, " "
S of H—1 Gasoline loco.; track gauge 40 in.
S of M—10 Comp. air mach.
PP—1 Water tube boiler, 150 H. P., 1 compressor, 1 pump.
EMP—100. Last fiscal year output 60,000 tons.

TERRY COAL CO.
Oneida Mine; Drift; Seam 26 in. thick.
PO—Oneida, Tenn.; CTY—Scott.
Note—Suspended operation.

TURLEY COAL CO.
General Office, Atlanta, Ga.
Turley Mine; Drift, Vanderpool Seam.
PO—Turley, Tenn.; SP—Coniville, Tenn; RR—Sou.
PR—R. O. Howard.....Atlanta, Ga.
TR—F. D. Bullock, " "
GM E. M. Sealbrook, " "
PA—E. M. Sealbrook, " "
CE—A. H. Wood.....Peros, Tenn.
EE—W. D. Householder..Turley, Tenn
MS—J. H. Rogers, " "
SM—J. H. Smith, " "
S of H—2 Elec. loco. track; gauge 42 in.
S of M—1 Elec. mach.
PP—2 Return tubular boilers, total 250 H. P., gen. unit 2300 volts A. C., 3 phase, 60 cycles, 1 pump.
EMP—25. Last fiscal year output 16,000 tons.

VASPER COAL MINING CO.
Vasper Mine; Slope; Coal Creak Seam, 44 in. thick.
PO—Vasper, Tenn.; SP—Same; CTY—Campbell; RR—Southern.
PR—C. P. Harley.
TR—C. P. Harley.
GM—T. C. Jacks, ...Knoxville, Tenn.
PA—T. C. Jacks, " "
CE—Meyers & Whaley, " "
S of H—Comp. air loco. and rope.
PP—1 Return tubular boiler, 100 H.P.

VIRGINIA MINING COMPANY (THE)
Roberta Mines, Drifts; No. 4 Seam, 36 in. thick.
PO—Roberta, Tenn. SP — Winfield, Tenn.; CTY—Scott; RR—C.N.O.& T. P.
PR—L. E. Bryant.....Roberta, Tenn.
GM—L. E. Bryant, " "
PA—L. E. Bryant, " "
EM—L. E. Bryant, " "
MS—Burrel Ryan and George Sneak, Roberta, Tenn.
TR—Dudley E. Bryant....Danville, Ky.
S of H—4 Elec. locos.; track gauge 36 in.
S of M—9 elec. mach.
PP—1 Wickes water tube boiler, total 400 H. P., 6 pumps.
EMP—200. Last fiscal year output 60,000 tons. Sales Agent, E. L. Bryant.

WHISTLE CREEK MINING CO.
Italian Blue Gem and Zechini Mines.
PO—Newcomb, Tenn.; CTY—Campbell.
No report.

WESTBOURNE COAL CO.
See Campbell Coal Mng. Co.

WILEY COAL CO.
Now Signal Mountain Coal Co.

WIND ROCK COAL & COKE CO.
General Office, 1312 American Trust Bldg., Birmingham, Ala.
Wind Rock No. 1 Mine, Drift, Dean Seam, 36 to 72 in. thick.
PO—Wind Rock, Tenn.; SP—Khotan, Tenn.; CTY—Anderson; RR—Louisville & Nashville, Cow Creek Br.
PR—H. L. Badham..Birmingham, Ala.
TR—R. E. Evans, " "
GS—W. C. Hutcheson.Wind Rock, Tenn.
PA—W. C. Hutcheson, " "
MS—T. M. Doyle, " "
SM—C. K. Goodson, " "
EM—F. J. Immler, " "
MM—C. C. Brackett, " "
EE—Martin J. Lide, Birmingham, Ala.
S of H—8 Elec. locos. and gravity; track gauge 42 in.
S of M—Hand and 5 Elec. chain mach.
PP—2 Sterling water boilers, total 300 H. P., 2 gen. units, 250 volts D. C., 3 pumps.
EMP—225. Last fiscal year output 151,320 tons. Sales Agent, Bewley-Darst Coal Co., Knoxville, Tenn.

WOOLDRIDGE JELLICO COAL CO.
General Office, Wooldridge, Tenn.
PR—P. Wooldridge, Pewee Valley, Ky.
TR—Jas.R.Wooldridge, Wooldridge,Tenn.
GM—Jas. R. Wooldridge, " "
GS—Wm. Dinkelaker, " "
PA—J. H. Queener, " "
SM—J. H. Queener, " "
MM—H. C. Douglass, " "
EE—S. M. Harris, " "
EM—B. L. Lloyd.....Jellico, Tenn.
Sales Agent, Jas. R. Wooldridge, Wooldridge, Tenn.

Marion-Anna Mine; Drift; Jellico Seam, 2½ to 5 ft. thick.
PO—Wooldridge, Tenn.; SP—Newcomb, Tenn.; CTY—Campbell; RR—Sou., Coster Div.
MS—T.H.Griffiths, Wooldridge, Tenn.
SM—W. F. Goins, " "
S of H—Elec. loco. and mules; track gauge 39 in.
S of M—Hand.
PP—250 volts D. C.
EMP—125. Last fiscal year output 50,000 tons.

Washington Mine; Drift; Blue Gem Seam; 18 to 30 in. thick.
PO—Wooldridge, Tenn.; SP—Newcomb, Tenn.; CTY—Campbell; RR—Sou., Coster Div.
MS—John C. Bates..Wooldridge, Tenn.
S of H—Mules; track gauge 39 in.
S of M—Hand.
EMP—70.

WYNN COAL CO.
Drift Mine; Rich Mtn. Seam, 36 to 44 in. thick.
PO—Gatliff, Tenn.; SP—Gotula, Tenn., CTY—Campbell. RR—L. & N.
PR—A. J. Jones.....Gatliff, Tenn.
TR—J. H. Tinsley, " "
GM—J. K. Orr, " "
MS—J. H. Wynn, " "
SM—Wynn Store Co.,
S of H—2 Elec. loco.; track gauge 40 in.
S of M—4 Elec. mach.
PP—Gen. units, 250 volts D. C., boiler, 160 H. P.
EMP—90. Last fiscal year output, 50,000 tons.

YOUNG COAL & COKE CO.
PO—Monterey, Tenn.; CTY—Overton.
No report.

ZECHINI COAL CO.
See Italian Blue Gem Coal Co.

TEXAS

For List of Abbreviations See Page 498.

ALBA-MALAKOFF LIGNITE CO.
General Office, Dallas, Tex.
PR—Jos. Samuels, ... Dallas, Tex.
TR—H. J. Maersch, " "
GM—H. J. Maersch, " "
PA—H. J. Maersch, " "
EM—W. O. Clark, ..Greenville, "
SCO—Malakoff Supply Co., buyer, W. N. Flagg, Malakoff, Tex.
Sales agent, Malakoff Lignite Co., Malakoff, Tex.

Nos. 1 and 3 Mines, Shafts, Alba Lignite Seams, 6 to 12 ft. thick.
PO—Alba, Tex. SP—Lignite Spur. CTY—Wood. RR—M. K. & T., Mineola Banch.
MS—T. M. Reaaley, ... Alba, Tex.
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand.
PP—1 Atlas water tube and 1 Ames return tubular boiler, total 200 H. P., 2 pumps.
EMP—40 to 50. Last fiscal year output, 63, 468 tons.

No. 2 Mine, Shaft, Malakoff Lignite Seam, 6 to 8½ ft. thick.
PO—Malakoff, Tex. SP—Same. CTY—Henderson. RR—St. Louis & Southwestern, Main Line.
MS—Alvin Gray, ... Malakoff, Tex.
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, total 100 H. P., 2 pumps.
EMP—60 to 75. Last fiscal year output, 57,446 tons.

AMERICAN LIGNITE BRIQUETTE CO.
Big Lump No. 5 Mine; Shaft; No. 5 Seam, 6 to 12 ft. thick.
PO—Big Lump, Tex. SP—Same. CTY—Milam. RR—I. & G. N., Main Line.
PR—C. T. Priest, ...San Antonio, Tex.
TR—J. J. Stevens, " "
GM—H. C. Koehler, " "
PA—A. C. Koehler, .. Big Lump, "
MS—A. C. Koehler, " "
SCO—Big Lump Trading Co. Buyer A. C. Koehler, Big Lump, Tex.
S of H—Mules and 2 elec. loco. Track gauge 30 in.
S of M—Hand and 4 compressed air machines.
PP—3 Casey & Hedges water tube boilers, total 400 H. P., 2 gen. units 250 volts D. C., 1 air compressor, 8 pumps.
EMP—125. Last fiscal year output 85,430 tons.
Note—Will start a new mine in 1915.

BASTROP COAL CO.
Denion and Titantic Mines; Shafts; Bastrop Seam; 102 to 120 in. thick.
PO—McDade, Tex. SP—Glenham, Tex. CTY—Bastrop. RR—M. K. & T. Smithville, Br.
PR—F. L. Denison.....McDade, Tex.
GM—F. L. Denison.....McDade, Tex.
PA—F. L. Denison, " "
EM—F. W. Denison, " "
MM—Jos. Carter, " "
MS—Leo. Descamp, " "
SM—R. J. Meyers, " "
TR—C. A. Hughes.....Temple, Tex.
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—2 Return tubular boilers, total 150 H. P., and 2 pumps
EMP—115. Last fiscal year output, 45,000 tons.

BEAR GRASS COAL CO.
General Office, Jewett, Tex.
Bear Grass Shaft Mine, No. 2, Shaft, Lignite Seam, 9 ft. thick.
PO—Newby, Tex. SP—Same. CTY—Leon. RR—T. & B. V. Ry. Co., Bear Grass Spur.
PR—A. D. Evans, Fort Worth, Tex.
VP—W. G. Bartels, ..Carlinville, Ill.
GM—H. B. Crosby, ... Jewett, Tex.
PA—H. B. Crosby, " "
MS—C. M. Ballard, " "
EM—C. M. Ballard, " "
SCO—Bear Grass Merc. Co., Buyer, T. G. Buchanan, Jewett, Tex.
S of H—Mule and rope. Track gauge 36 in.
S of M—Hand.
PP—2 pumps. Boilers, total 110 H. P.
EMP—101. Last fiscal year output 71,536 tons.

BELKNAP COAL CO.
Mine No. 4; Shaft; No. 7 Seam; 38 to 56 in. thick.
PO—New Castle, Tex. SP—Same. CTY—Young. RR—W. F. & Southern Ry.
PR—J. J. Perkins, Witchita Falls, Tex.
GM—J. J. Perkins, " "
TR—Frank Kell.....New Castle, Tex.
MS—W. F. Nance, " "
EM—W. F. Nance, " "
MM—P. O. Hatfield, " "
S of H—Mules. Track gauge 34 in.
S of M—Hand.
PP—2 Return tubular boilers, total 240 H. P.
EMP—250. Last fiscal year output, 100,000 tons.

BRIDGEPORT COAL COMPANY.
Mines Nos. 2 and 3, Shafts, Seams 18 to 22 in. thick.
PO—Bridgeport, Tex. SP—Same. CTY—Wise. RR—C. R. I. & G.
PR—W. H. Aston, Meadow View, Va.
GM—W. H. Aston, " "
TR—W. H. John, .. Bridgeport, Tex.
GS—W. H. John, " "
EM—W. H. John, " "
PA—E. T. Bingham, " "
SM—E. T. Bingham, " "
MS—No. 2, T. J. McAfee, " "
MS—No. 3, Tommy Byrnes, " "
EE—W. H. Lane, " "
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—5 Return tubular boilers, total 480 H. P., 1 gen. unit, 250 volts D. C., 4 pumps.
EMP—226. Last fiscal year output, 57,991 tons.

CALVIN COAL CO.
Calvin Mines No. 1 and 2; Upper and Lower Lignite Seam; 26 to 116 in. thick.
PO—Calvin, Tex. SP—Same. CTY—Bastrop. RR—M. K. & T.
PR—W. C. Sillimon..San Antonio, Tex.
GM—W. C. Sillimon, " "
TR—C. F. Austin, " "
MS—John Waugh .....Calvin, Tex.
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—Boilers, total 125 H. P., 2 pumps.
EMP—50. Last fiscal year output 18,000 tons.

CANNEL COAL CO.
General Office Laredo, Texas.
PR—C. B. Wright....Philadelphia, Pa.
Asst—E. F. Wager .....Laredo, Tex.
PA—E. F. Wager, " "
TR—H. G. DaCamara, " "
GS—D. D. Davis .....Dolores, Tex.
EM—R. W. Davis, " "
MM—R. DeWolff, " "
EE—R. DeWolff, " "
Sales agent, E. F. Wager, Laredo, Tex.

Darwin Mine; Shaft; "San Pedro" Seam; 20 to 24 in. thick.
PO—Darwin, Tex.; SP—Same; CTY—Webb; RR—Rio Grande & Eagle Pass.
MS—R. W. Davis.....Dolores, Tex.
SM—Thos. Worsham ....Darwin, Tex.
S of H—Mules and 4 gasoline locos Track gauge 36 in.
S of M—Hand.
PP—4 return tubular boilers, total 240 H. P., 1 air comp., 10 pumps.
EMP—207. Last fiscal year output, 45,269 tons.

Dolores Mine; Shaft; "Santo Tomas" and "San Pedro" Seam; 20 to 28 in. thick.
PO—Dolores, Tex. SP—Same. CTY—Webb. RR—Rio Grande and Eagle Pass.
MS—R. W. Davis.....Dolores, Tex.
SM—John Loftus, " "
S of H—Mules, 1 elec. and 1 gasoline loco. Track gauge 36 in.
S of M—Hand and 2 Elec. mach.
PP—1 water tube, 3 return tubular boilers, total 1750 H. P., 1 gen. unit, compressor and 13 pumps.
EMP—280. Last fiscal year output, 49,225 tons.

CARR COAL CO.
General Office San Antonio, Tex.
PR—T. F. Smith....San Antonio, Tex.
GM—R. W. Carr, " "
PA—R. W. Carr, " "
TR—T. F. Smith, " "
CE—R. W. Carr San Antonio, Tex.
MM—T. F. Smith .....McDade, Tex.
SCO—Evergreen Commissary, Buyer, R. Buniva, McDade, Tex.

Carr Shaft No. 1 Mine, Shaft, Cretaceous Seam, 3½ to 5½ ft. thick.
PO—RD No. 2, McDade, Tex. SP—Glenham. CTY—Bastrop. RR—M. K. & T.
MS—R. Buniva, R. F. D., McDade, Tex.
S of H—Mules; track gauge 23 in.
S of M—Hand.
PP—1 return tubular boiler
EMP—100. Output from March 1 to Dec. 31, 1914, 26,424 tons.
Note—Lytle Mine exhausted.

COMO LIGNITE MINING CO.
Ryan Mine, Shaft, Seam 5 ft. 10 in. to 6 ft. thick.
PO—Como, Tex.; SP—Same; CTY—Hopkins. RR—M. K. & T., Shreeves Port Branch.
Continued on Next Page.

PR—H. Giesecke.....Ballinger, Tex.
TR—G. M. Ryan.....Rockdale, Tex.
GM—D. C. Earnest, " "
GM—G. M. Ryan, " "
PA—G. M. Ryan, " "
GS—T. H. Paul.....Como, Tex.
MS—E. Summerrow, " "
SM—W. M. Paul. "
EM—J. W. Wallace, " "
S of H—Mules and rope.
S of M—Hand.
PP—1 return tubular boiler, total 100 H. P.
EMP—40. Last fiscal year output, 33,700 tons.

CONSUMERS LIGNITE CO.
Nos. 6, 7 and 8 Mines; Slope, Seam, 72 to 108 in. thick.
PO—Hoyt, Texas; ASP—Same; CTY—Wood; RR—T. S. L., M. K. & T., Mincola Div.
PR—D. C. Earnest.....Hoyt, Tex.
TR—D. C. Earnest, " "
GM—D. C. Earnest, " "
PA—D. C. Earnest, " "
GS—G. M. Hodges, " "
EM—D. McN. Phillips, " "
MM—D. McN. Phillips, " "
EE—R. E. Reid, " "
SCO—Address the Company " "
S of H—1 Steam, 1 gasoline loco. and and mules; track gauge 30 in.
S of M—5 comp. air mach.
PP—5 return tubular boilers, total 500 H. P., gen. units 250 volts D. C., 1 compressor, 9 pumps.
EMP—180. Last fiscal year output 194,385 tons.

COOKVILLE COAL & LUMBER CO.
See Libby Mfg. Co.

DENISON, F .L.
PR—F. L. Denison.....McDade, Tex.
TR—F. L. Denison, " "
GM—F. L. Denison, " "
PA—F. L. Denison, " "
EM—F. D. Denison, " "
MM—J. G. Jacks, " "
Sales Agency, Bastrop Lignite Coal Co.

Belto Mine Slope; Bastrop Seam, 42 to 66 in. thick.
PO—McDade, Tex.; SP—Belto, Tex.; CTY—Bastrop; RR—M. K. & T., Smithville Br.
MS—John Belto.....Bastrop, Tex.
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—1 Atlas return tubular boilers, 120 H. P., 4 pumps.
EMP—75. Last fiscal year output 30,000 tons.

Sayers Mine; Slope, Bastrop Seam, 125 to 144 in. thick.
PO—McDade, Tex.; SP—Sayers, Tex; CTY—Bastrop; RR—M. K .& T., Smithville Br.
MS—J. G. Jacks.....McDade, Tex.
S of H—Mules; track gauge 30 in.
PP—1 Atlas return tubular boiler 75 H. P. Developing.

HOUSTON COUNTY COAL & MFG. CO.
General Office, Crockett, Tex.
PR—G. Q. King .....Crockett, Tex.
GM—G. Q. King, " "
PA—G. Q. King, " "
TR—John LeGory, " "
EM—Davis Crow .....Crockett, Tex.
Sales agency, John LeGory, Crockett, Tex.

Woosters Mine; Shaft; Seam 60 to 84 in. thick.
PO—Lovelady, Tex.; SP—Woosters, Tex.; CTY—Houston. RR—Inter. and Great Northern.
MS—W. E. Elkins.....Lovelady, Tex.
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, toal 100 H. P., 1 compressor and 1 pump.
EMP—85. Last fiscal year output, 82,518 tons.

Evansville Mine; Shaft; Seam 72 to 120 in. thick.
PO—Evansville, Tex. SP—Same. CTY—Leon; RR—Houston & Tex. Cen.
MS—W. Q. Lundy ....Evansville, Tex.
SM—W. Q. Lundy, " "
S of H—Mules. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, 100 H. P., 1 pump.
EMP—90. Last fiscal year output, 85,677 tons.

INDEPENDENCE MINING CO.
Mines Nos. 2 and 3; Shaft; No. 1 Seam; 48 to 72 in. thick.
PO—Phelan, Tex.; SP—Same; CTY—Bastrop; RR—M. K. & T.
PR—J. C. Phelan, ...Phelan, Tex.
GM—J. C. Phelan, " "
TR—Iago Meusebach, " "
PA—Iago Meusebach, " "
GS—Hunter C. Phelan, " "
EM—Hunter C. Phelan, " "
MM—C. G. Swenson, " "
SCO—Phelan Merc. Co., " "
S of H—Mules.
S of M—Hand.
PP—Atlas boilers, total 600 H.P.
Sales Agent, C. G. Meusebach, San Antonio, Tex.

INTERNATIONAL COAL MINES CO.
Shaft Mine.
PO—Eagle Pass, Tex. SP—Same. CTY—Maverick. RR—G. H. & S. A.
PR—J. D. Guinn....San Antonio, Tex.
GM—L. B. Leighton ..Eagle Pass, Tex.
MS—Wm. Strain, " "
S of H—Mules and rope.
S of M—Hand and comp. air mach.
PP—6 boilers, total 480 H. P.
EMP—350.

LIBBY MFG. CO.
Nodena Lignite Mine, Slope, Seam 6 to 8 ft. thick.
PO—Mt. Pleasant, Tex. SP—Nodena. CTY—Titus. RR—Cotton Belt.
PR—L. C. Libby...Mt. Pleasant, Tex.
PA—L. C. Libby, " "
TR—Mrs. L. C. Libby, " "
GM—A. L. Brooks, " "
SM—A. L. Brooks, " "
MS—C. A. Brooks, " "
S of H—Mules and rope. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, total 60 H. P.

LOWER STRATA LIGNITE MINING CO.
Lower Strata Mine, Shaft.
PO—Ledbetter, Tex.; SP—Same; CTY—Fayette, RR—H. & T. C.
PR—T. T. Felder.....Giddings, Tex.
TR—T. T. Felder, " "
GM—T. T. Felder, " "
PA—T. T. Felder, " "
MS—T. T. Felder, " "
MM—Theodore Troll....Ledbetter, Tex.
S of H—Mules.
S of M—Hand.
PP—Boiler 60 H. P.
EMP—20. Last fiscal year output 75,000 tons.
Sales Agent, T. T. Felder Giddings, Tex.

McKAY LIGNITE MINING CO.
General Office, Dallas, Tex.
Lone Star No. 2 Mine, Shaft, Seam 6 ft. thick.
PO—Como, Tex. SP—Same. CTY—Hopkins. RR—M. K. & T.
PR—J. C. McKay .....Dallas, Tex.
GM—J. C. McKay, " "
TR—H. J. McKay, " "
MS—D. L. Jernigan .....Como, Tex.
S of H—Mules.
S of M—Hand.
PP—1 return tubular boiler, total 100 H. P.
EMP—30. Last fiscal year output 35,000 tons.
Sales agent, McKay Coal Co., Dallas, Tex

MALAKOFF LIGNITE CO.
See Alba-Malakoff Lignite Co.

MOUNT MARION COAL MINING CO.
See Strawn Coal Mining Co.

OLMOS COAL CO.
Larmar Mine, Shaft, "Semi-bituminous" Seam, 6 to 8 ft. thick. Operate washery.
PO—Eagle Pass, Tex. SP—Same. CTY—Maverick. RR—G. H. & S.A.
PR—Ernesto Madero, 115 Broadway, New York.
GM—L. M. Larmar, 1601 Main ave., San Antonio, Tex.
S of H—Mules. Track gauge 3 ft.
S of M—Hand.
PP—4 water tube boilers, total 300 H. P.
EMP—150. Last fiscal year output 24,000 tons.

ROCKDALE CONS. COAL CO.
PO—Hicks, Tex. CTY—Lee County.
No report.

SALLIE ALICE MINING CO.
General Office, Archer City, Tex.
Seam 22 to 28 in. thick.
PO—Loving, Tex.; SP—Same; CTY—Young; RR—G. T. & W.
PR—W. E. Foogy....Archer City, Tex.
S of H—1 Steam loco.
S of M—Hand.
PP—1 Pump.
EMP—12-16.

SANTO TOMAS COAL CO.
General Office, Laredo, Texas.
Mines Nos. 1 and 4, Shaft and Slope, "Santo Tomas" Seam, Eacene period 18 to 41 in. thick.
PO—Minera, Tex. SP—Same. CTY—Webb. RR—R. G. & E. P.
PR—Albert Urbehm .....Laredo, Tex.
TR—M. L. Cogley, " "
PA—Harry Johnson, " "
GM—George Derby .....Minera, Tex.
EM—A. C. Pudewa, " "
MS—A. C. Pudewa, " "
MM—F. L. Kippenbrook, " "
EE—Anto Rodrianeg, " "
SCO—Santo Tomas Store. Buyer, C. F. Perron, Minera, Texas.
S of H—Mules, rope, 1 steam and 2 gasoline locos. Track gauge 30 in.
S of M—Hand, and 2 elec. mach.
PP—6 Erie water tube boilers, total 510 H. P., 1 gen. unit, 2,200 volts A. C., 3 phase, 60 cycles, 1 gen. unit, 110 volts D. C., 1 pump.
EMP—290. Last fiscal year output 28,310 tons.
Sales agent, J. R. Smith, Laredo, Tex.

SOUTHWESTERN FUEL CO.
No. 1 Mine; Shaft; Seam 72 to 120 in. thick.
PO—Calvert, Tex.; SP—Same; CTY—Robertson; RR—I. & G. N.
PR—A. C. Burke.....Calvert, Tex.
TR—A. C. Burke, " "
GM—A. C. Burke, " "
PA—A. C. Burke, " "
MS—R. M. Waugh, " "
CE—Wm. E. Anderson.....Dallas, Tex.
S of H—Elec. loco.; track gauge 24 in.
S of M—Hand.
PP—3 Water tube boilers, total 300 H.P., gen. unit, 220 volts D. C., and 5 pumps.
EMP—250. Last fiscal year output, 130,000 tons.

STANDARD LIGNITE CO.
Out of business.

STRAWN COAL CO.
PR—W. Burton .....Fort Worth, Tex.
TR—A. Diffenbach, " "
GM—J. H. McLure .....Strawn, Tex.
PA—J. H. McLure, " "
EM—B. W. Southern.....Strawn, Tex.
GS—J. Halifax.....Lyra, Tex.
EE—E. W. Berry, " "
MM—A. Waugh, " "
SCO—Strawn Mdse Co. Buyer, W. S. Warren, Strawn, Tex.
Sales agent, address the Co., at Strawn, Tex.

Mt. Marion Mine, Shaft, Seam 26 to 30 in. thick.
PO—Strawn, Tex. SP—Same. CTY—Palo Pinto. RR—Texas & Pac.
MS—B. Brookman.....Strawn, Tex.
S of H—Mules and 1 Storage Battery loco.; track gauge 30 in.
S of M—Hand.
PP—4 return tubular boilers, total 300 H. P., 1 gen. unit, 1,100 volts A. C., 30 cycles, 1 air comp., 1 pump.
EMP—271. Last fiscal year output, 96,691 tons.

Mine No. 2, Shaft, Seam 24 to 30 in. thick.
PO—Lyra, Tex. SP—Strawn, Tex. CTY—Palo Pinto. RR—Tex & Pac.
MS—W. McKinnon.....Lyra, Tex.
S of H—Mules. Track gauge 30 in.
S of M—Hand.
PP—4 Return tubular boiler, total 320 H. P., 1 pump.
EMP—245. Last fiscal year output, 73,799 tons.

TEXAS COAL CO.
Shaft, Seam 6 to 10 ft. thick.
PO—Rockdale, Tex. SP—Same. CTY—Milam. RR—I. & G. N.
PR—H. C. Meyer ....Rockdale, Tex.
TR—C. K. Stribling " "
GM—C. K. Stribling, " "
PA—C. K. Stribling, " "
SM—C. K. Stribling, " "
MS—B. S. Gentry, " "
EM—B. S. Gentry, " "
S of H—Mules and rope. Track gauge 30 in.
S of M—Hand.
PP—2 return tubular boilers total 200 H. P., 4 pumps.
EMP—75. Last fiscal year output 60,000 tons.

TEXAS & PACIFIC COAL CO.
Shaft Mine.
PO—Thurber, Tex.; SP—Mingus, Tex.; CTY—Erath; RR—T. & Pac.
PR—Edgar L. Marston, 24 Broadway, New York, N.Y.
TR—Edgar L. Martson, 24 Broadway, New York, N.Y.
GM—W. K. Gordon, ...Thurber, Tex.
SCO—Texas Pacific M. & M. Co.
S of H—Elec. Loco.
S of M—3 Elec. mach. and hand.
EMP—2,000. Last fiscal year output 745,360 tons.

WISE COUNTY COAL CO.
Slope Mine; Seam 18 in. thick.
PO—Bridgeport, Tex.; SP—Same; CTY—Wise; RR—C. R. I. & P.
GM—C. W. Martin, Bridgeport, Texas
S of H—Mules.
S of M—Hand.
PP—1 Return tubular boiler, 80 H. P.
EMP—50. Last fiscal year output 14,000 tons.

UTAH

For List of Abbreviations See Page 498.

AMERICAN FUEL CO
General Office, Salt Lake City, Utah.
Neslen Mine; Drift; Book Cliff Seam; 60 to 84 in. thick.
PO—Neslen, Utah; SP—Thompson, Utah; CTY—Grand; RR—D. & R. G., B. & T. Branch.
PR—B. F. Bauer....Salt Lake Cty, Uah
TR—B. F. Neslen, Salt Lake City, Utah.
PA—B. P. Spry, Salt Lake City, Utah
EM—W. J. Hillabrandh..Neslen, Utah
MM—J. A. Ecton, " "
EE—J. A. Ecton, " "
SCO—Neslen Mercantile Company, Neslen, Utah.
S of H—2 Gasoline loco.; track gauge, 42 in.
S of M—4 Elec. Mach.
PP—2 Erie City return tubular boilers, total 160 H. P., 2 gen. units, 250 volts D. C., and 3 pumps.
EMP—250. Last fiscal year output, 110,000 tons.

AMERICAN ASPHALT ASSN.
Little Bonanza, Ute, Norvell and Harris Mines. CTY—Uinta.
MS—T. A. Mathews.....Watson, Utah
No report.

ANDERSON, AXEL L.
Rock Canyon Mine, Drift, Seam 10 ft. thick.
PO—Clawson, Utah; CTY—Emery.
PR—Axel L. Anderson..Clawson, Utah
S of H—Gravity track gauge 39 in.
S of M—Hand.

ANDERSON COAL COMPANY.
PO—Orangeville, Utah.
Just incorporated, have not begun to operate.

ANTHRACITE COAL CO.
PO—Cedar, Utah; CTY—Iron.
MS—R. A. Kirker, Cedar, Utah.
State report.

BLACK HAWK COAL CO.
General Office, Salt Lake City, Utah.
Blackhawk Mine; Drift; Book Cliff Seam, 12 to 19 ft.
PO—Black Hawk Mine, Utah; SP—Same; CTY—Carbon; RR—D. & R. G., Southern Utah Branch.
PR—E. L. Carpenter, Salt Lake City, Utah
TR—E. R. Gibson, Salt Lake City, Utah
GS—R. M. Magraw....Black Hawk, Utah
PA—T. W. Lewis, " "
EM—J. R. Carpenter, " "
MS—Gus Goethart, " "
SCO—Carbon Emery Store Co., buyer, J. Beattie, Salt Lake City, Utah.
S of H—5 Elec. mach. and mules; track gauge 42 in.
S of M—16 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., gen. unit 2300 volts A.C., 3 phase, 60 cycles, 9 pumps.
EMP—300. Last fiscal year output 164 tons. Sales Agent, W. D. McLean, Salt Lake City, Utah.

BURTON BROS.
Brush Creek Mine.
PO—Vernal, Utah, CTY—Uinta.
No report.

CAMERON COAL CO.
General Office, Salt Lake City, Utah.
Cameron Mine; Slope, Seam 102 in. thick.
PO—Castle Gate, Utah; SP—Same; CTY—Carbon; RR—D. & R. G.
PR—M. S. Browning, Salt Lake City, Utah.
TR—Marriner Browning, Salt Lake City, Utah.
GM—E. S. Rolapp, Salt Lake City, Utah.
PA—E. S. Rolapp, Salt Lake City, Utah.
MS—George Howard, Castle Gate, Utah.
EM—Chas. Leger, " "
MM—R. W. Goss, " "
EE—R. W. Goss, " "
SCO—Cameron Stores Co., " "
S of H—Mules.
S of M—3 Elec. mach. and hand.
PP—3 Return tubular boilers, 1 pump.
EMP—85.
Sales Agency, S. F. Balliff, Salt Lake City, Utah.
New operation.

CASTLE VALLEY COAL CO.
General Office, Salt Lake City, Utah.
Mohrland Mine, Drift, Book Cliff Seam, 12 to 19 ft. thick.
PO—Mohrland, Utah; SP—Same; CTY—Emery; RR—Castle Valley.
PR—E. L. Carpenter, Salt Lake City, Utah
TR—E. R. Gibson, " "
GS—R. M. Magraw....Black Hawk, Utah
PA—T. W. Lewis, " "
EM—J. R. Carpenter, " "
MM—R. G. Garr, " "
MS—M. L. Garvey, " "
SCO—Carbon Emery Store Co., buyer J. Beattie, Salt Lake City, Utah.
S of H—7 Elec. loco. and mules; track gauge 42 in.
S of M—17 Elec. mach. and hand.
PP—3 Return tubular boilers, total 1450 H. P., gen. unit, 2300 A. C., 3 phase, 60 cycles; 1 comp., 9 pumps.
EMP—325. Last fiscal year output 400,000 tons.
Sales Agent, W. D. McLean, Salt Lake City, Utah.

CONSOLIDATED FUEL CO.
General Office, Salt Lake City, Utah.
Hiawatha Mine; Draft; Book Cliff Seam; 12 to 19 ft. thick.
PO—Hiawatha, Utah; SP—East Hiawatha, Utah; CTY—Carbon; RR—D. & R. G., Southern Utah Br.
PR—E. L. Carpenter, Salt Lake City, Utah
TR—E. R. Gibson, " "
GS—R. M. Magraw....Black Hawk, Utah
PA—T. W. Lewis, " "
EM—J. R. Carpenter, " "
MM—R. G. Garr, " "
MS—Gus Goodhart....Black Hawk, Utah
SCO—Carbon Emery Store Co., buyer J. Beattie, Salt Lake City, Utah.
S of H—7 Elec. loco. and rope; track gauge 42 in.
S of M—16 Elec. mach. and hand.
PP—8 Return tubular boilers, 1 750 K. W. turbine, 2 250 K. W., gen., 2300 volts A. C., 3 phases, 60 cycles, 1 comp., 9 pumps.
EMP—400. Last fiscal year output 240,000 tons.
Sales Agent, W. D. McLean, Salt Lake City, Utah.

COVE CREEK COAL CO.
General Office, Gunnison, Utah.
PO—Sterling, Utah.
PR—M. Beauregard....Gunnison, Utah.
No report.

GILSON ASPHALTUM CO.
General Office, Philadelphia, Pa.
1 Mine in Utah, 2 Mines in Colorado.
Carbonera Mine; Drift and Slope; Seam 72 to 93 in. thick.
PO—Mack, Colo. SP—Mack, Colo. CTY—Mesa.; RR—Unitah.
PR—A. W. Sewall..Philadelphia, Pa.
TR—Ira Atkinson, " "
GM—M. W. Cooley.....Mack, Colo.
PA—Homer D. Ford, " "
MS—Homer D. Ford, " "
S of H—Mules.
Track gauge, 40 in.
S of M—Hand.
EMP—8. Last fiscal year output, 700 tons.

HARMONY COAL CO. (THE)
Nos. 3 and 4 Mines; Shaffts; L. Colorado Anthracite Seam; 52 to 108 in. thick.
PO—New Harmony, Utah; CTY—Washington.
PR—I. L. Shaffer, New Harmony, Utah.
TR—I. L. Shafer, " "
VP—A. A. Kirker, " "
GM—R. A. Kirker, " "
S of H—Mules.
S of M—Hand.
EMP—2-12.

INDEPENDENT COAL & COKE CO.
General Office, Salt Lake City, Utah.
Kenilworth Mine, Slope; Seam, 17 to 22 ft. thick.
PO—Kenilworth, Utah; SP—Helper, Utah, CTY—Carbon; RR—Denver & Rio Grande, Kenilworth & Helper Br.
PR—C. N. Strevell Salt Lake City, Utah
GM—C. N. Strevell, " "
TR—Jas. H. Paterson, " "
PA—W. B. Outcalt, " "
CE—Geo. B. Wilson, " "
EM—C. F. Cate.....Kenilworth, Utah
MS—W. J. Elwood..Kenilworth, Utah
SM—B. Randolph, " "
MM—W. H. Woodhead, " "
SCO—Kenilworth Mercantile Co., buyer, B. Randolph, Kenilworth, Utah.
S of H—Horses, rope and gravity; track gauge 42 in.
S of M—Hand and 6 Elec. mining mach.
PP—8 Kewanee return tubular boilers, total 1000 H. P., 2 gen. units, 2300 volts, A. C., 3 phase, 60 cycles; 250 volts, A. C.
EMP—383. Last fiscal year output, 319,876 tons.
Sales agent, Wm. Groton, Salt Lake City, Utah.

KETCHAM COAL CO.
PO—Castle Gate, Utah CTY—Carbon.
MS—G. C. Miller...Castle Gate, Utah
State report.

KIDD, A. B., & SONS.
Bluebell Mine, Slope, Seam 7 ft. thick.
PO—Vernal, tah. CTY—Uinta.
GM—A. C. Kidd.....Vernall, Utah
MS—A. B. Kidd, " "
S of H—Mules; track gauge 24 in.
S of M—Hand.
Last fiscal year output 337 tons.

KNIGHT INVESTMENT CO.
General Office, Provo, Utah.
Johnson No. 2 Mine; Drift; Bituminous Seam, 84 to 120 in. thick.
PO—Orangeville, Utah; CTY—Emery.
PR—Jesse Knight.....Provo, Utah
MS—A. M. Johnson....Orangeville, Utah
Idle for about 20 months.

MOUNT PLEASANT COAL CO.
PO—Mt. Pleasant, Utah; CTY—Sampete.
MS—Pete A. Larsen, Mt. Pleasant, Utah
No report.

OLIPHANT BROS.
PO—Orangeville, Utah; CTY—Emery.
MS—Ralph Oliphant..Orangeville, Utah
State report.

PACK & ALLAN.
Mill Mine; Slope; Seam 48 to 66 in. thick.
PO—Vernal, Utah. CTY—Uinta.
TR—L. H. Allan.....Vernal, Utah
GM—Leon R. Pack, " "
MS—Leon R. Pack, " "
PA—L. H. Allan, " "
S of H—Rope; track gauge 24 in.
S of M—Hand and 1 Elec. mach.
PP—One pump; buy power.
EMP—13. Last fiscal year output, 4,500 tons.

PANTHER COAL CO.
General Office, Salt Lake City, Utah.
Panther Mine, Slope, Castle Gate Seam, 6 to 8 ft. thick.
PO—Carbon, Utah; SP—Panther-Switch or Castle Gate; CTY—Carbon; RR—D. & R. G.
PR—E. L. Carpenter, Kearns Bldg., Salt Lake City, Utah
TR—E. R. Gibson, Kearns Bldg., Salt Lake City, Utah.
VP—H. P. Macmillon..Black Hawk, Utah
GS—R. M. Magraw, " "
PA—T. W. Lewis, " "
CE—C. F. Moore, Salt Lake City, Utah.
EM—Jas. R. Carpenter, Black Hawk, Utah
SCO—Carbon-Emery Stores Co., Salt Lake City, Utah. Buyer, J. M. Beatty.
S of H—Mules, rope and elec.; track gauge 40 in.
S of M—4 Elec. machines.
PP—1 Gen. unit, 2300 volts A. C., 3 phases and 60 cycles. Purchase power.
EMP—85. Last fiscal year output, 48,000 tons.
Sales Agent, Utah Coal Sales Agency, Salt Lake City, Utah.

REES GRASS CREEK COAL CO.
Out of business.

RICH, JOSEPH.
PO—Vernal, Utah. CTY—Uinta.
MS—Joseph E. Rich.....Vernal, Utah
State report.

SAN RAFAEL FUEL CO.
General Office, 341 S. Main St. Salt Lake City, Utah.
Queatchuppah No. 1 Mine; Drift, Mancos Seam.
PO—Castle Dale, Utah; CTY—Emery.
PR—P. J. Quealy, ...Kemmerer, Wyo.
TR—A. W. McKinnin,....Price, Utah.
GM—Ira R. Browning, Castle Dale, Utah.
S of H—Gravity.
S of M—Hand.
EMP—3; Last fiscal year output 1000 tons.

SPRING CANYON COAL CO.
General Office, 817 Newhouse Bldg., Salt Lake City, Utah.
Spring Canyon Mine, Drift; Sub-Seams Nos. 1 and 2, Castle Gate Seam No. 3; 4 ft. 6 in. to 12 ft. thick.
PO—Storrs, Utah; SP—Same; CTY—Carbon; RR—Denver & Rio Grande, Spring Canyon Br.
PR—Jesse Knight.....Provo, Utah
GM—Geo. A. Storr, " "
TR—J. S. Smith, Salt Lake City, Utah
PA—J. A. Stallings, " "
MS—A. E. Gibson.....Storrs, Utah
EM—W. W. Clyde, " "
MM—Wm. Stephenson, " "
EE—Wm. Stephenson, " "
SCO—Storrs Merc. Co., buyer, L. B. Adams.
S of H—9 Elec. loco.; track gauge 40 in.
S of M—12 Elec. machines.
PP—5 return tubular boilers, total 750 H. P., 2300 volts, A. C., 3 phases, 60 cycles, 250 volts, D. C.; 2 small pumps.
EMP—260. Last fiscal year output, 195,000 tons.
Sales Agent, J. S. Smith, Salt Lake City, Utah.

STANDARD COAL CO.
Standard Mine.
PO—Salt Lake City and Helper, Utah, CTY—Carbon.
MS—Walter Harris, Standardville, Utah.

UNION FUEL CO.
General Office, Ogden, Utah.
Grass Creek Mine, Slope, Grass Creek Seam 7 to 14 ft. thick.
PO—Coalville, Utah; SP—Same; CTY—Summit; RR—Union Pacific.
PR—M. S. Browning.....Ogden, Utah
TR—Royal Eccles, " "
GM—D. H. Pope, " "
MS—W. B. Mowbray, " "
EM—R. Y. Gibson, Grass Creek, Utah
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—4 Water tube boilers, total 400 H. P., 3 engines, 3 pumps.
EMP—80. Last fiscal year output, 40,000 tons.
Sales Agent, H. C. Marchant, Ogden, Utah.

UTAH FUEL CO.
General Office, Salt Lake City, Utah.
5 Mines in Utah and 1 Mine in Colo.
PR—E. T. Jeffery....New York, N. Y.
TR—Asst. E. A. Greenwood, Salt Lake City, Utah
GM—A. H. Cowie, " "
PA—H. N. How, " "
EM—A. C. Watts, " "
GS—Jas. S. Thompson, " "
MM-Genl—A. A. Le Roy, " "
SCO—Wasatch Store Co., buyer J. B. Shinness, Salt Lake City, Utah.
Sales Agency, A. D. Pierson, Salt Lake City, Utah.
Castle Gate Mine, Drift, Seam 12½ ft. thick.
PO—Castle Gate, Utah; SP—Same; CTY—Carbon; RR—D. & R. G.
MS—Wm. Littlejohn..Castle Gate, Utah
SM—Levi Davis, " "
S of H—2 Elec. loco. and mules; track gauge 40 in.
S of M—11 Elec. mach. and hand.
PP—11 Return tubular boilers, total 1375 H. P., 3 gen. units 500 volts D. C.
EMP—498. Last fiscal year output, 325,049 tons.
Winter Quarters Mine; Drift; Seam, 14 ft. thick.
PO—Winter Quarters, Utah; SP—Scofield, Utah; CTY—Carbon; RR—D. & R. G.
MS—T. J. Parmley, Winter Quarters, Utah
SM—D. A. Haymond, " "
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—Hand.
PP—9 Return tubular boilers, total 1125 H. P., 4 gen. units 500 volts D. C., 1 pump.
EMP—355. Last fiscal year output, 365,246 tons.
Clear Creek Mine; Drift; Seam, 14 ft. thick.
PO—Clear Creek, Utah; SP—Scofield, Utah; CTY—Carbon; RR—D. & R. G.
MS—Andrew Gilbert..Clear Creek, Utah
SM—Samuel Woodhead, " "
S of H—2 Elec. loco. and mules; track gauge 40 in.
S of M—Hand and 2 Elec. mach.
PP—6 return tubular boilers, total 750 H. P., 2 gen. units, 500 volts D. C., 3 pumps.
EMP—255. Last fiscal year output, 239,175 tons.
Utah Mine; Drift; Seam, 8 ft. thick.
PO—Utah Mine, Utah, SP—Scofield, Utah; CTY—Carbon; RR—D. & R. G.
MS—Emil Ostlund....Utah Mine, Utah
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 return tubular boilers, total 250 H. P., 1 pump.
EMP—105. Last fiscal year output, 92,907 tons.
Sunnyside Mine; Drift and Slope; Seam, 60 to 132 in. thick.
PO—Sunnyside, Utah, SP—Same; CTY—Carbon; RR—D. & R. G.
MS—W. N. Wetzel....Sunnyside, Utah
SM—A. D. Hadley, " "
S of H—4 Elec. loco. and mules.
S of M—4 elec. mach. and hand.
PP—14 Return tubular boiler, total 1725 H. P., 3 gen. units 500 volts D. C., 2 pumps.
EMP—1155. Coke Ovens, 726, Bee Hive. Last fiscal year output, 699,-695 tons.

WEBER COAL CO.
General Office, Salt Lake City, Utah, P. O. Box 1328.
Wasatch Mine, Slope, Weber River Seam, 9 to 14½ ft. thick.
ville, Utah; CTY—Summit; RR—Union Pacific, Echo and Park City Br.
PR—J. E. Bamberger, Salt Lake City, Utah
GM—Ernest Bamberger, " "
PA—Wm. Pitt, " "
MS—T. J. Lewis.....Coalville, Utah
MM—Jos. Jones, " "
EM—F. T. Williams..Park City, Utah
S of H—Mules; track gauge 30 in.
S of M—Hand.
PP—3 Return tubular boilers, total 160 H. P., 5 pumps.
EMP—34. Development work, 16,878 tons.
Sales Agent, Herbert Cohen, Salt Lake City, Utah.

WEST MOUNTAIN COAL CO.
Wales Mine.
PO—Wales, Utah; CTY—Sampete.
MS—W. J. Rees.....Wales, Utah
State report.

VIRGINIA

For List of Abbreviations See Page 498.

BECHAM COAL CO.
Now Lykens Hill Coal Co.

BIG VEIN POCAHONTAS COAL CO.
General Offices, Columbus, O., and Baltimore, Md.
Big Vein Nos. 1 and 2, Shaft and Slope. "Pocahontas No. 3" Seam, 10 ft. 8 in. thick.
PO—Pocahontas, Va.; SP—Same and Ollivette, Va.; CTY—Tazewell; RR—N. & W., Pocahontas Div.
PR—H. H. Heiner.....Columbus, O.
GM—H. H. Heiner, " "
VP—E. P. Keech, Jr., Baltimore, Md.
TR—J. J. Sheehan, " "
PA—Geo. B. Smith, Pocahontas, Va.
MS—Geo. B. Smith, " "
SM—A. E. Green, " "
MM—Frank Wood.....Pocahontas, Va.
EE—Cleve Tabor, " "
EM—D. C. Jones, Freeman, W. Va.
S of H—Mules and 7 Elec. loco.; track gauge 44 in.
S of M—Hand and 1 elec. mach.
PP—4 Babcock & Wilcox boilers, 2 gen. units, 550 volts, D. C.
EMP—400. Last fiscal year output, 400,000 tons.
Sales Agent, The Maynard Coal Co., Columbus, O.

BIG TOWN HILL CREEK COAL CORP.
Slope Mine; Red Ash Seam, 66 to 96 in. thick.
PO—Richlands, Va.; SP—Same; CTY—Tazewell; RR—N. & W.
PR—W. B. Spratt, ...Richlands, Va.
TR—J. M. Wilson, " "
GM—J. M. Wilson, " "
PA—J. M. Wilson, " "
SCO—A. M. Stinson Store, " "
S of H—Mules.
S of M—Hand.
EMP—35. Last fiscal year output 15,733 tons.

BLACK MTN. MNG. CO. INC.
General Office, Big Stone Gap, Va.
Kamart Mine; Drift; No. 5 Seam.
PO—St. Charles, Va.; SP—Same; CTY—Lee; RR—V. & S. W. L. & N.
GM—J. W. Kelley, Big Stone Gap, Va.
PA—J. W. Kelley, " "
EM—Fox & Peck, " "
MS—J. P. Adams, " "
S of H—Mules and elec. locos.
S of M—Elec. mach.
PP—2 Boilers, total H. P. 150; gen. units, 250 volts D. C.
EMP—200.

BLACKSBURG COAL CO.
Blacksburg Mine; Slope, Seam 36 in. thick.
PO—Blacksburg, Va.; SP—Same; CTY—Montgomery; RR—N. & W.
PR—N. M. Orr.....Blacksburg, Va.
TR—Seymour Price, " "
S of H—Mules.
S of M—Hand.
EMP—6.
Successors to Seymour, Price & Co.

BLACKWOOD COAL & COKE CO.
General Office, Blackwood, Wise Co., Va.
2 Mines in Virginia and 1 in Kentucky.
PR—C. Pardee.....Phila., Pa.
TR—A. Pardee, " "
GM—C. J. Creveling..Blackwood, Va.
PA—C. J. Creveling, " "
EM—F. L. Gobbie, " "
MM—Wm. York.....Blackwood, Va.
EE—Eugene Daniels.....Pardee, Va.
Sales Agent, C. F. Rice, Jr., Spartanburg, S. C.

Roaring Fork Mine, Drift, Seam 48 in. thick.
PO—Roaring Fork, Va.; SP—Same; CTY—Wise; RR—Southern, Roaring Fork Br. Interstate.
MS—J. M. Freeman..Roaring Fork, Va.
SM—M. E. Wells, " "
S of H—6 elec. loco. Track gauge 44 in.
S of M—6 Elec. machines.
PP—4 Return tubular boilers, total 500 H. P., 3 gen. units 500 volts D. C., 1 air comp. and 2 pumps.
EMP—300. Coke ovens 282 Bee Hive at Blackwood, Va.

Pardee Mine, Drift, Seam 10 ft. 4 in. thick.
PO—Pardee, Va., SP—Same, CTY—Wise; RR—Roaring Fork Br., Southern.
MS—J. F. Bohannon.....Pardee, Va.
SM—J. F. Affantranger,..Pardee, Va.
S of H—7 Elec. loco., track gauge 44 in.
S of M—7 Elec. mach.
PP—1 Edgemoor water tube and 2 H. S. & G. return tubular boilers, total 800 H. P., 3 gen. units 500 volts D. C., 2 pumps.
EMP—340. Last fiscal year output, (for both mines) 350,000 tons.

BLUE RIDGE COAL CO.
General Office, Roanoke, Va.
Blue Ridge Mine; Drift; Upper and lower Banner Seam; 36 to 60 in. thick.
PO—Norton, Va.; SP—Pine, Va.; CTY—Wise; RR—N. & W., Clinch Valley Div.
PR—F. G. Hatton.....Roanoke, Va.
TR—Wm. M. Brown, " "
GM—G. Huettal .....Norton, Va.
MS—G. Huettal, " "
SM—Creed Jones.....Coeburn, Va.
S of H—Mules; track gauge 36 in.
S of M—Hand.
PP—2 Pumps.
EMP—45. Last fiscal year output 35,000 tons.
Sales Agency, Hatton, Brown & Co., Roanoke, Va.

BONDERNAUT COAL & COKE CO.
See United Collieries, Inc.

BUCHANAN LUMBER & COAL CO.
General Office, 424 Market St., Camden, N. J.
Note—Will not commence development until 1916.

CLINCHFIELD COAL CORPORATION.
PR—C. E. Bockus.....Dante, Va.
TR—E. D. Jobe, " "
GS—Lee Long, " "
PA—J. L. Ubil, " "
EM—G. T. Stevens, " "
MM—C. E. Booker, " "
EE—C. J. Miller.....Clinchfield, Va.
Sales Agent, Clinchfield Fuel Co., Spartanburg, S. C.

(Dante Operations)
Mines Nos. 2, 3, 4, 5, 52 and 103, Drifts; "Upper and Lower Banner" Seam, 4 to 6 ft. thick.
PO—Dante, Va.; SP—Same; CTY—Russell; RR—C. C. & O.
MS—R. G. John.....Dante, Va.
SM—M. C. Matthews, " "
S of H—64 Elec. loco.
S of M—39 Elec. mach.
PP—4 compressors and 8 pumps. Power from central station at Hurricane Mine.
EMP—1000. Last fiscal year output 370,000 tons.

(Laurel operation)
Mines Nos. 6 and 55; Drifts "Upper and Lower Banner" Seam, 4 to 6 ft. thick.
PO—Wilder, Va.; SP—Hurricane, Va.; CTY—Russell; RR—C. C. & O.
MS—W. J. Heatherman,..Wilder, Va.
SM—M. C. Matthews.....Dante, Va.
S of H—25 Elec. loco.; track gauge 48 and 36 in.
S of M—15 Elec. mach.
PP—1 compressor and 7 pumps. Power from Hurricane Mine.
EMP—650. Last fiscal year output, 250,000 tons.

Cranes Nest Mine No. 1, Drift; "Upper Banner" Seam, 4 to 4 ft. 6 in. thick.
PO—Toms Creek, Va.; SP—Same; CTY—Wise; RR—N. & W., Clinch Valley Br.
MS—D. L. Rumgay....Toms Creek, Va.
SM—M. C. Matthews.....Dant Va.
S of H—12 Elec. loco.; track gauge 44 in.
S of M—12 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 2 gen. units, 250 volts, D. C.; 3 pumps.
EMP—350. Last fiscal year output 310,000 tons.

Hurricane Slope No. 201; Slope; "Imboden" Seam, 4 to 5 ft. thick.
PO—Clinchfield, Va.; SP—Hurricane, Va. CTY—Russell; RR—C. C. & O.
MS—W. J. Heatherman...Wilder, Va.
SM—M. C. Matthews.....Dante, Va.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—2 Elec. mach.
PP—10 Water tube boilers, toal 3000 A. C., 3 phase, 60 cycles, 2 pumps.
EMP—10.
Closed at present.

CLINCH RIVER COAL COMPANY.
See Lewis Creek Coal Company.

COLONIAL COAL & COKE CO.
General Office, 143 Liberty St., New York, N. Y.
Dorchester No. 2, Haskell Nos. 1, 3 and 7 Mines, Drifts, Up and L. Banner Seams, 4½ to 7 ft. thick.
PO—Dorchester, Va. SP—Dorchester Junction, Va. CTY—Wise. RR—L. & N., Interstate Colonial.
PR—J. L. Kemmerer..New York, N.Y.
TR—W. E. Decker, " "
CE—J. H. Allport....Barnesboro, Pa.
PA—W. W. Kemp ....Dorchester, Va.
GS—R. H. Allport, " "
MS—J. P. Hogan, " "
EM—F. L. Heinze, " "
MM—A. D. Riffey, " "
EE—J. B. Sterret, " "
SM—J. U. Gillenwater, " "
S of H—5 elec. loco and mules. Track gauge 44 in.
S of M—5 elec. mach. and hand.
PP—Power purchased, 2 gen. units, 1-500 volts D. C., 2,200 volts A. C., 3 phase, 60 cycles.
EMP—230. Coke ovens 450 bee Hive. Last fiscal year output 150,000 tons.
Sales agent, Whitney-Kemmerer Co., Norton, Va.

DARBY COAL MINING CO.
Darby Mine, Drift, No. 5 Seam, 33 to 40 in. thick. Operate washery.
PO—Darbyville, Va. SP—St. Charles, Va. CTY—Lee. RR—L. & N., C. V. Div., Southern, V. & S. W. Div.
PR—J. R. McDowell ..Knoxville, Tenn.
TR—H. R. Hooten.....Darbyville, Va.
GM—C. H. Thompson, " "
PA—H. R. Hooten, " "
MS—E. A. Allen, " "
SM—J. W. Sells, " "
EM—D. L. Lindamoor, " "
MM—John Tedder, " "
EE—E. H. Edwards, " "
S of H—4 Elec. loco.; track gauge 42 in.
S of M—14 Comp. Air mach.
PP—2 return tubular boilers, total 350 H. P., 1 gen. unit, 250 volts D. C., 1 compressor and 1 pump.
EMP—165. Last fiscal year output, 98,500 tons.
Sales agent, R. H. Bartlet, Cincinnati, Ohio.

DOMESTIC COAL CO.
General Office, Bluefield, W. Va.
Domestic Mine, Drift.
PO—Ravens, Va. SP—Same. CTY—Tazewell. RR—N. & W.
GM—E. Bond .....Bluefield, W.Va.
PA—E. Bond, " "
EM—Scarborough & Dodson.Norton, Va.
MS—J. C. Preas .....Raven, Va.
SM—E. Bond, " "
S of H—Elec. loco. and mules.
S of M—Hand.
PP—Gen. units, 250 volts A. C., boiler, 150 H. P.
EMP—60.

DOMINION COAL CO.
See United Collieries, Inc.

EMPIRE COAL LAND CORP.
M. Ziegler, Receiver.
PR—A. K. Morison.....Alfredton, Va.
TR—A. C. Matherson, " "
GS—M. Ziegler, " "
PA—A. K. Mann, " "
EM—Fox & Peck..Big Stone Gap, Va.
EE—E. C. Cassity, " "
Sales agent, Wm. C. Atwater & Co.

Seaboard Mine, Drift, Seam 3½ to 6 ft. thick.
PO—Alfredton, Va. SP—Seaboard. CTY—Tazewell. RR—Big Creek Br., N. & W.
MS—C. S. Kennedy....Alfredton, Va.
SM—S. F. Lovell, " "
S of H—7 elec. locos. Track gauge 4 ft.
S of M—Hand and 5 elec. mach.
PP—4 return tubular boilers, total 600 H. P., 2 gen. units, 250 volts D. C., 3 pumps.
Coke ovens, 100 Bee Hive.
Last fiscal year output 141,390 tons.

Richlands Mine, Drift, Seam 4 to 6 ft. thick.
PO—Seaboard, Va. SP—Lark, Va. CTY—Tazewell. RR—N. & W., Big Creek Branch.
MS—M. Zeigler .....Seaboard, Va.
SM—W. C. Amos, " "
S of H—Mules and 1 elec. loco. Track gauge 42 in.
S of M—Hand.
PP—2 return tubular boilers, total 250 H. P., 1 gen. unit, 250 volts D. C., 1 pump.

ESSER COAL & COKE CO.
Kyle Mine, Drift.
PO—Esserville, Va. SP—Norton, Va. CTY—Wise. RR—L. & N., N. & W.
GM—John A. Esser ....Esserville, Va.
PA—J. M. Yeary, " "
EM—Scarborough & Dodson.Norton, Va.
MS—John Stuart .....Esserville, Va.
S of H—Mules and elec. locos.
PP—3 boilers.
EMP—200.

EUREKA COAL CO.
Stroubles Creek Mine; Slope; Seam 54 to 60 in. thick.
PO—Vicar Switch, Va.; SP—Vicker, Va.; CTY—Montgomery; RR—N. & W.
PR—F. D. Kinzer, Vicar Switch, Va.
PA—F. D. Kinzer, " "
TR—J. W. Kinzer, " "
MS—R. J. Hodges, " "
S of H—Rope.
S of M—Hand.
PP—Boiler 60 H.P., 2 pumps.
EMP—10. Output 3,000 tons.
Successors to G. M. Kinzer & Sons.

FELTON COAL CO. Inc.
Imboden and Banner Mines; Slope and drift; Imboden, L. Banner and Kennedy Seams, 48 to 144 in. thick.
PO—Tacoma, Va.; SP Greeno Siding, Va. (Prepay). CTY—Wise; RR—N. & W., Clinch Valley Div.
GM—W. J. Sproles, Asheville, N. C.
PR—M. F. Hatfield.....Tacoma, Va.
GS—M. F. Hatfield, " "
TR—George F. Neel, " "
PA—George F. Neel, " "
MS—Jas. M. Daffron, " "
MM—James Hall, " "
EE—Will Whited, " "
SCO—Address the Company. " "
CE—Scarborough & Dotson, Norton, Va.
S of H—Mules and rope.
S of M—Hond.
PP—3 Water tube boilers, total 275 H. P., 1 compressor, 4 pumps.
EMP—100.

FLAT ROCK COAL CO., INC.
Flat Rock Mine, Slope, "Widow Kennedy" Seam.
PO—Della, Va. SP—Honaker, Va. CTY—Russell.
PR—M. F. Beamer....Bluefield, W.Va.
GM—M. F. Beamer, " "
PA—M. F. Beamer, " "
TR—Mrs. Dona L. Hounshell, " "
EM—Meems & Haskins, " "
SM—E. H. Brightwell, " "
MS—Jas. Dixon, " "
MS—Jas. Cooper, " "
S of H—Mules.
S of M—1 elec. mach.
PP—2 boilers.
EMP—35. Output 7,575 tons.

FLEMING, ROBT. & CO.
General Office, Norton, Va.
Upper Banner Mines; Drift; "Upper Banner Seam; 48 to 72 in. thick.
PO—Banner, Va.; SP—Bannervane, Va.; CTY—Wise; RR—N. & W.
PR—Robert Fleming .....Norton, Va.
TR—Jas. B. Fleming, " "
GM—David Barrowman.....Banner, Va.
PA—David Barrowman, " "
MS—Chas. Barrowman, " "
SM—J. N. Booth, " "
CE—Scarborough & Dotson, Norton, Va.
S of H—Mules, rope and 1 steam loco. Track gauge 36 in.
S of M—Hand and 1 Elec. mach.
PP—1 boiler, 85 H. P., and 1 Steam pump.
EMP—85. Last fiscal year output, 100,000 tons.

FORK RIDGE COAL CO.
Mines leased to the Felton Coal Co.

HAGAN COAL & COKE CO.
Out of business.

HUETTEL COAL & COKE CO.
Huettle Mine. Drift, "Edwards" Seam, 48 to 66 in. thick.
PO—Norton, W. Va. SP—Same. CTY—Wise. RR—N. & W.

Continued on Next Page.

HUETTEL COAL & COKE CO.—Continued.
PR—E. H. Ould.....Norton, Va.
GM—E. H. Ould, " "
TR—Mrs. Ethel C. Ould, " "
PA—Jos. Porter, " "
MS—H. G. Rose, " "
SM—L. M. Love, " "
EM—Scarborough & Dotson, " "
S of H—Mules. Track gauge 44 in.
S of M—Hand.
EMP—100. Last fiscal year output 60,000 tons.

INTERMONT COAL & IRON CO.
General Office, Big Stone Gap, Va.
No. 1 Mine; Drift; Seam 60 in thick.
PO—Dooley, Va.; SP—Dorchester Junction, Va.; CTY—Wise; RR—L. & N.
PR—R. T. Irvine....Big Stone Gap, Va.
TR—J. W. Kelly, " " "
GM—J. W. Kelly, " " "
MS—M. K. Kelly, " " "
MM—Wm. Kelly, " " "
EM—Fox & Peck, " " "
S of H—Mules.
S of M—Hand.
Coke Ovens, 80 Bee Hive.

JAMES RIVER COAL CORPORATION.
General Office, Richmond, Va.
Midlothian Mine, Shaft and Incline, Triassic Seam.
PO—Midlothian, Va. SP—Same. CTY—Chesterfield. RR—Sou.
PR—Meriwether Jones ..Richmond, Va.
TR—Meriwether Jones, " "
GM—Meriwether Jones, " "
MS—Meriwether Jones, " "
PA—Thos. Armstrong, " "
S of H—Mules.
S of M—Comp. air.
PP—4 return tubular boilers, total 500 H. P., 2 air comp. and 4 pumps.

JEWELL RIDGE COAL CORPORATION.
General Office, Tazewell, Va.
Jewell Ridge, Pocahontas Mines; Drift; Jewell Pocahontas Seam; 48 in. thick.
PO—Coaldan, Va.; SP—Jewell, Va.; CTY—Tazellwell RR—N. & W., Big Creek Br.
PR—Thos. M. Righter..Mt. Carmel, Pa.
TR—Geo. W. St. Clair....Tazewell, Va.
GM—Geo. W. St. Clair, " "
PA—C. W. Steele, " "
EM—J. P. Williams, " "
MS—Malcolm McDougall....Coaldan, Va.
EE—Clint Stewart, " "
S of H—Mules 3 Elec., 1 gasoline and 1 steam loco.; track gauge 44 in.
S of M—Hand and 2 Elec. mach.
PP—Purchase power.
EMP—125. Last fiscal year output, 85,000 tons.
Sales Agent, Schrader-Kelly Coal Co., Cleveland, O.

JONES MINING CO.
Kipps Mine.
PO—Wise, Va.; CTY—Wise.
No report.

KINSER, G. M. & SON.
Now Eureka Coal Co.

KIPPS ANTHRACITE COAL CO., INC.
Price Mtn. Mine.
PO—Cambria, R. F. D., Va.; CTY—Montgomery.
No report.

KIPPS & LINKONS.
Out of business.

LEWIS CREEK COAL CO.
Drift Mine, Red Ash Seam, 42 in. thick.
PO—Richlands, Va.; SP—Putnam, Va.; CTY—Tazelwell; RR—N. & W.
PR—W. B. Spratt.....Richlands, Va.
GM—W. B. Spratt " "
PA—W. B. Spratt, " "
TR—H. L. Spratt, " "
EM—T. P. Morgan, " "
S of H—Mules
S of M—Hand.
EMP—10. Last fiscal year output 3,000 tons.

LYKENS HILL COAL CO., Inc.
Nos. 1 and 2 Mines; Slopes; Price Mtn Seam; 72 to 96 in. thick.
PO—Merrimac Mines, Va.; SP—Blacksburg, Va.; CTY—Montgomery; RR—N. & W., Blacksburg, Br.; Virginian.
PR—L. S. Randolph, Blacksburg, Va.
TR—V. C. Austin, " "
GM—D. R. Jones, Merrimac Mines, Va.
GS—R. B. Shelor, " "
PA—A. R. Jones....Merrimac Mines, Va.
EM—F. W. Wall.....Blacksburg, Va.
S of H—Steam loco, mules and hand; track gauge 22 and 36 in.
S of M—Hand.
PP—3 Boilers, total 450 H.P., 3 pumps.
EMP—80. Producing about 100 tons daily.
Sales Agency, West Virginia Coal Co., Richmond, Va.
Successors to the Becham Coal Co.

MATOAKA COAL CORPORATION.
Matoaka Mine; Drift, Red Ash Seam, 32 to 72 in. thick.
PO—Richlands, Va.; SP—Same; CTY—Tazewell RR—N. & W.
PR—C. M. Kaylor.....Norfolk, Va.
TR—C. M. Kaylor, " "
GM—E. Tatterson.....Richlands, Va.
PA—E. Tatterson, " "
MS—C. W. Shafer, " "
EM—J. P. Williams.
SCO—Address the Company, " "
S of H—Mules.
S of M—Hand.
EMP—78.
Successors to the Pocahontas Coal Mng. Co.

MILLER COAL CO.
PO—Tacoma, Va.
No report.

MONARCH COAL CO.
Succeeded by Old Virginia Coal Co.

NORTON COAL CO.
Norton Mines, Drift, Upper and Lower Banner Seams, 3½ to 8 ft. thick.
PO—Norton, Va.; SP— Same; CTY—Wise; RR—L. & N., Sou., N. & W., C. C. & O.
PR—Warren J. Willits, Santa Barbara, California.
GM—Webb J. Willits ....Norton, Va.
PA—Webb J. Willits, " "
TR—Richard I. Cawthorne, " "
GS—Richard I. Cawthorne, " "
EM—Scarborough & Dotson " "
MM—Henry Quillen, " "
EE—H. C. Buchanan, " "
SM—Joe M. Porter, " "
S of H—Mules, 6 elec. and 1 steam loco. Track gauge 36 in.
S of M—Hand and 5 elec. mach.
PP—4 water tube boilers, total 500 H. P., 4 gen. units, 250 volts D. C.
EMP—250. Last fiscal year output, 101,000 tons.
Coke ovens, 150 Bee Hive.
Sales agent, Hatton Brown & Co., Roanoke, Va.

OLD VIRGINIA COAL CO.
General Office, Knoxville, Tenn.
Leona No. 1 Mine, Drift, No. 5 or Darby Seam, 36 to 48 in. thick.
PO—Leona Mines, Va. SP—St. Charles, Va. CTY—Lee. RR—L. & N., C. V. Div., Southern Va. and S. W. Div.
PR—J. R. McDowell..Knoxville, Tenn.
TR—R. H. Bartlit.....Cincinnati, O.
GM—C. H. Thompson..Darbyville, Va.
PA—J. E. Thompson, Leona Mines, Va.
MS—W. T. Robinson.Leona Mines, Va.
SM—J. E. Thompson, " "
EM—D. L. Lindamoor, " "
MM—Ed. Jones, " "
EE—Ed. Jones, " "
S of H—Mules and 3 elec. locos. Track gauge 44 in.
S of M—4 Elec. mach.
PP—2 return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 3 pumps.
EMP—157. Last fiscal year output, 89,000 tons.
Sales agent, Darby Coal Sales Co., Cincinnati, Ohio.

POCAHONTAS COAL MINING CO.
Succeeded by Matoaka Coal Corp.

POCAHONTAS CONSOLIDATED COLLIERIES CO., INC.
General Office, Pocahontas, Va.
Twenty-four mines in Virginia and West Virginia.
PR—Isaac T. Mann Bramwell, W Va
TR—L. R. Crawford Pocahontas, Va
GM—Jas. Ellwood Jones, Switchback, W. Va.
Asst GM—J. C. Turley.Pocahontas, Va
PA—W. D. Garwood, " "
CE—A. H. Stow, " "
EM—A. H. Stow, " "
EE—W. A. Bishop, " "
SCO—J. W. Bailey, buyer, " "
Gen. Counsel—Geo. W. Woodruff, 1 Broadway, N. Y.
Asst Sec—J. W. Graybeal, Pocahontas, Va
Sales agency, Pocahontas Fuel Co., 1 Broadway, New York.

West Mine and Baby Mine, Drifts, Pocahontas No. 3 Seam; 141 in. thick.
PO—Pocahontas, Va. SP—Same. CTY—Tazewell. RR—N. & W.
MS—R. Wallace.....Pocahontas, Va.
SM—W. R. Sheets, " "
S of H—Mules, rope, elec. and steam loco; track gauge 36 in.
S of M—Elec. mach.
PP—Power purchased.
Coke ovens, 800, Bee Hive.

Boissevain Mine, Shaft, Pocahontas No. 3 Seam, 144 in. thick.
PO—Boissevain, Va. SP—Same. CTY—Tazewell. RR—N. & W., Pocahontas Div.
MS—J. K. Whitehead..Boissevain, Va.
SM—T. R. Aiken, " "
S of H—Rope and elec. Track gauge 36 in.
S of M—Electric mach.
PP—Power purchased.

PULASKI ANTHRACITE COAL CO.
General Office, No. 1 Broadway, New York.
Slope, "Brush Mountain" Seam, 6 to 8 ft. thick. Operate washery.
PO—Parrott, Va. SP—Same. CTY—Pulaski; RR—Redford Div., N. & W.
PR—W. Del Walbridge.
TR—J. H. Parrott .....Parrott, Va
GM—J. H. Parrott, " "
MS—J. T. Evans, " "
PA—J. T. Evans, " "
SM—T. C. Harris, " "
S of H—Rope and mules. Track gauge 38 in.
S of M—Hand.
PP—Boilers, total 450 H. P.
EMP—130.
Sales agent, Smokeless Fuel Co.

RAVEN COLLIERIES CO., INC.
General Office, Bluefield, W. Va.
Raven Nos. 1, 2 and 3 Mines; Drifts; Raven Red Ash Seam; 32 to 48 in. thick.
PO—Red Ash, Va.; SP—Same; CTY—Tazewell; RR—N. & W., Clinch Valley Div., Coal Creek Br.
PR—G. G. Wilder.....Bluefield, W.Va.
VPR—J. Elliott Hall, " "
TR—W. S. Patterson, " "
Secy—J. S. Kahle, " "
CE—T. M. Morrison, " "
GM—T. M. Morrison, " "
PA—T. M. Morrison, " "
MS—E. S. McCorkle, Red Ash, Va.
SM—W. G. Newland, " " "
S of H—Mules; track gauge 44 in.
S of M—Hand.
PP—Boiler 35 H.P.
EMP—40. Last fiscal year output (April 1st) 30,914 tons.
Sales Agent, J. Elliott Hall, Bluefield, W. Va.
Successors to the Raven Fuel Co., Inc.

RAVEN RED ASH COAL CO.
Red Ash Nos. 1 and 2 Mines; Drifs; Red Ash Seam, 30 to 38 in. thick.
PO—Red Ash, Va. SP—Same. CTY—Tazewell. RR—N. & W., Coal Creek Branch.
PR—J. N. Harman .....Tazewell, Va.
TR—C. B. Neel,.....Red Ash, Va.
GM—C. B. Neel, " "
MS—C. B. Neel, " "
PA—C. B. Neel, " "
SM—Jesse McCall, " "
EM—Meems & Haskins, " "
S of H—Mules and 4 elec. locos. Track gauge 48 in.
S of M—Hand and 6 Elec. mach.
PP—2 Atlas return tubular boilers, total 300 H. P., 2 gen. units, 250 volts D. C.
EMP—170. Last fiscal year output, 107,000 tons.
Sales Agent, C. B. Neel ,Red Ash, Va.

RAVEN FUEL CO., INC.
Now Raven Colleries, Co., Inc.

RED ASH POCAHONTAS COAL CO.
Red Ash Poca Mine, Drift, Red Ash Seam, 30 to 72 in. thick.
PO—Raven, Va.; SP—Same; CTY—Tazelwell; RR—N. & W., Coal Creek Br.
GM—W. H. Plant.....Columbus, O.
PA—W. H. Plant, " "
GS—W. H. Plant, " "
EM—Scarboro & Dotson....Norton, Va.
SCO—Address the Company, Raven, Va.
S of H—2 Elec. loco.; track gauge 44 in.
S of M—Hand.
PP—Power purchased.
EMP—45. Last fiscal year output 26,600 tons.
Sales Agency, Colonial Coal & Supply Co., Columbus, O.

RENFRO, J. M. COAL CO.
PO—Tacoma, Va. CTY—Wise.
No report.

SANDY RIDGE COAL & COKE CO.
PO—Drill, Bluefield, W. Va.; CTY—Russell.
No report.

SLUSSER, M. C. & CO.
PO—Blacksburg, Va.; CTY—Montgomery.
No report.

STONEGA COKE & COAL CO.
General Office, Land Title Bldg., Philadelphia, Pa.
PR—D. B. Wentz....Land Title Bldg., Philadelphia, Pa.
TR—H. B. Price, Land Title Bldg., Philadelphia, Pa.
GM—E. Drennen..Big Stone Gap, Va.
PA—R. R. Casper..Big Stone Gap, Va.
EM—D. B. Sayers, " "
MM—Albert Fisher, " "
GS—R. E. Taggart.....Stonega, Va.
CE—Wm. Hobbs, " "
MM Acting—Albert Fisher, " "
SM—S. J. Gundry, " "
Sales Mgr., Otis Monser, Big Stone Gap, Va.

Stonega Nos. 1, 2, 3 and 4 Mines, Drift, Imboden Seam.
PO—Stonega, Va. SP—Same. CTY—Wise. RR—Interstate.
MS—C. G. Duffy .....Stonega, Va.
S of H—Mules and elec. loco.
S of M—Hand.
PP—10 boilers, 500 volts D. C.

Osaka Nos. 1 and 2 Mines, Drift, Imboden Seam.
PO—Osaka, .Va SP—Same. CTY—Wise. RR—Interstate.
MS—E. F. Tate.....Osake, Va.
S of H—Mules and elec. locos.
S of M—Hand and elec. mach.
PP—500 volts D. C.

Roda Nos. 1, 2, 3 and 4 Mines, Drift, Taggart Seam.
PO—Roda, Va. SP—Same. CTY—Wise.
MS—W. A. Owens .....Roda, Va.
S of H—Mules and elec. locos.
S of M—Hand and elec. mach.

Arno Nos. 1 and 2 Mines, Drift, Imboden Seam.
PO—Arno, Va. SP—Same. CTY—Wise.
MS—C. W. Rotenberry .....Arno, Va.
S of H—Mules and elec. locos.
S of M—Hand and elec. mach.

Imboden Mine; Drift; Imboden Seam.
PO—Imboden, Va., SP—Same; CTY—Wise. RR—V. & S. W.
MS—H. A. Alexander....Imboden, Va.
S of H—Mules and elec. locos.
S of M—Hand.
PP—4 boilers, total 600 H. P., 250 volts D. C.

Keokee Nos. 2 and 3 Mines, Drift, McConnell Seam.
PO—Keokee, Va. SP—Same. CTY—Lee. RR—V. & S. W.
MS—J. K. Taggart .....Keokee, Va.
S of H—Elec. loco.
S of M—Hand.
PP—7 boilers, total 2,100 H. P., 250 volts D. C.

Clover Fork Mine, Drift.
PO—Keokee, Va. SP—Same. CTY—Lee. RR—V. & S. W.
MS—J. K. Taggart.....Keokee, Va.
S of H—Mules and elec. loco.
S of M—Hand and elec. mach.
PP—250 volts D. C.
EMP—4000 at all mines.
Coke Ovens—1,756, Bee Hive, situated at Stonega, Oska, Imboden and Keokee.

STONE GAP COLLIERY CO.
Glamorgan Mines, Drift, Edwards Seam. 50 to 60 in.
PO—Glamorgan, Va. SP—Same. CTY—Wise. RR—Interstate, Glamorgan Div.
PR—Jas. Gayley, 71 Broadway, New York, N. Y.
TR—J. R. Floyd, 71 Broadway, New York, N. Y.
VP—J. S. Cheyney....Glamorgan, Va.
PA—J. S. Cheyney, " "
MS—J. S. Cheyney....Glamorgan, Va.
MM—J. E. Williams, " "
EM—Scarborough & Dotson..Norton, Va.
S of H—Mules and 9 elec. locos.
S of M—6 Elec. mach.
PP—4 Atlas return ubular boilers, 500 H. P., 3 gen. units, 250 volts D. C., 1 compressor, 1 pump.
EMP—300. Last fiscal year output, 98,000 tons.
Coke ovens, 350 Bee Hive.

SOUTHERN POCAHONTAS COAL CO.
Out of business.

STEPHENS COAL CO.
No. 2 Mine.
PO—Wise, Va.; CTY—Wise.
No report.

SUTHERLAND COAL & COKE CO.
Sutherland No. 2 Mine, "Widow Kennedy" Seam, 4 to 4 ft. 10 in thick.
PO—Manning, Va. SP—Dorchester, Va. CTY—Wise. RR—L. & N., Interstate.
PR—J. L. Kemmerer..New York, N.Y.
TR—W. E. Decker, " "
GS—R. H. Allport....Dorchester, Va.
PA—W. W. Kemp, " "
EM—F. L. Heinze, " "
MS—J. P. Hogan, " "
CE—J. H. Allport ....Barneshoro, Pa.
SM—M. Zeigler .....Manning, Va.
S of H—4 elec. loco. Track gauge 44 in.

Continued on Next Page.

S of M—3 elec. mach.
PP—Gen. units, 500 volts D. C., 6,600 volts A. C., 3 phase, 60 cycles and 1 pump, power purchased.
EMP—110. Coke ovens, 200 Bee Hive. Last fiscal year output 77,600 tons.
Sales agency, Whitney-Kemmerer Co., Norton, Va.

UNITED COLLIERIES, INC.
PR—R. Tate Irvin..Big Stone Gap, Va.
TR—N. D. Bachman.....Brisol, Va.
GM—C. W. Bondurant.St. Charles, Va.
GS—C. W. Bondurant, " "
PA—C. W. Bondurant, " "
EM—E. M. Gilly, " "
CE—W. E. Pucketts....Pennington, Va.
Sales agent, Bewley Darst Coal Co., Bristol, Va.

Dominion Mine, Drift, No. 5 Seam, 40 to 50 in. thick. Operate washery.
PO—St. Charles, Va. SP—Same. CTY—Lee. RR—L. & N., and V. & S. W.
MS—R. H. Wheeler....St. Charles, Va.
SM—C. P. Russell, " "
S of H—4 Elec. loco.; track gauge. 44 in.
S of M—4 elec. mach.
PP—2 pumps purchase power.

Bondurant Mine Drift, No. 5 Seam.
PO—St. Charles, Va. SP—Same. CTY—Lee. RR—L. & N., V. & S. W.
MS—J. W. McBrayer..St. Charles, Va.
SM—Elbert Ashbury, " "
S of H—Mules. Track gauge 44 in.
S of M—Hand.

VIRGINIA CITY COAL CO., INC.
Drift Mine; "Jaw Bone" Seam; 48 to 72 in. thick.
PO—Virginia City, Va. SP—Same. CTY—Wise. RR—Norfolk & Western Ry.
PR—Geo. W. Lambert.Virginia City,Va.
MS—D. E. Lambert, " "
MM—D. E. Lambert, " "
TR—J. T. Wilson....Bluefield, W.Va.
GM—W. T. Williams, " "
PA—W. T. Williams, " "
EM—Roy Wright.....Springton, W.Va.
SM—J. G. Lambert..Virginia City, Va.
S of H—Mules and 1 steam loco. Track gauge 44 in.
S of M—Hand.
PP—1 air comp., 2 pumps.
EMP—50.
Sales agent, Bluefield Coal & Coke Co., Bluefield, W. Va., and Norfolk & Chesapeake Coal Co., Majestic Bldg., Detroit, Mich.

VIRGINIA IRON, COAL & COKE CO.
PR—John B. Newton....Roanoke, Va.
TR—J. W. Cure, " "
GM—H. K. McHarg, Jr., " "
CS—D. A. Patterson, " "
PA—O. B. Newton, " "
CE—J. W. Beckham, " "
EM—J. A. Deaton....Tom Creek, Va.
EE—S. E. Cabell, " "
Sales agent. C. W. Owen, Roanoke, Va.

Toms Creek Mine, Drift, "Banner" Seam. 84 in. thick.
PO—Toms Creek, Va. SP—Same. CTY—Wise. RR—N. & W.
MS—Albert Lunsford ..Toms Creek, Va.
SM—Willoughby Blackard, " "
S of H—Mules and 14 Elec. loco.; track gauge 44 in.
S of M—Hand and 5 Elec. mach.
PP—2 Rust water tube boilers, 6 return tubular boilers, total 1500 H. P., 4 gen. units, 500 volts D. C., 6 pumps.
EMP—1800. Coke Ovens, 800, Bee Hive.

Marion Mine; Drift, "Banner" Seam; 48 in. thick.
PO—Vicco, Va.; SP—Coeburn, Va.; CTY—Wise. RR—N. & W.
MS—R. T. Hopkins .....Vicco, Va.
SM—Raymond Cure, " "
S of H—Mules and 4 Elec. loco.; track gauge 44 in.
S of M—5 Elec. mach.
PP—2 Pumps. Power from Toms Creek Mine.
EMP—225.

Looney Creek Mine, Drift, "Imboden" Seam 84 in. thick.
PO—Inman, Va.; SP—Appalachia, Va.; CTY—Wise; RR—V. S. W.
MS—W. M. Huffman.....Inman, Va.
SM—P. R. Milguire, " "
S of H—Mules and 5 elec. loco. Track gauge 44 in.
S of M—Hand.
PP—4 return tubular boilers, total 600 H. P., 2 gen. units, 550 volts D. C., 3 pumps.
EMP—850.
Coke Ovens—176 Bee Hive.

Imperial Mine, Drift, "No. 6 Black Mountain" Seam, 50 in. thick.
PO—Leona Mines, Va. SP—St. Charles, Va. CTY—Lee. RR—V. S. W., & L. & N.
MS—R. R. Williams.Leona Mines, Va.
SM—Mr. Hill, " "
S of H—6 elec. loco. Track gauge 44 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit, 500 volts D. C., 4 pumps.
EMP—175.

VIRGINIA-LEE CO., INC. (THE)
General Office, Norfolk, Va.
Virginia Lee Mine, Drift, No. 5 Seam, 42 to 48 in thick.
PO—St. Charles, Va. SP—Same. CTY—Lee. RR—L. & N., V. & S. W.
PR—Jas. M. Barr.....Norfolk, Va.
VP—A. W. Wagner..St. Charles, Va.
TR—A. W. Wagner, " "
PA—A. W. Wagner, " "
EM—Fox & Peck, ..Big Stone Gap, Va.
S of H—5 elec. loco. Track gauge 44 in.
S of M—Hand and 5 elec. mach.
PP—2 Return tubular boilers, gen. units, 250 volts D. C., and 1 pump.
EMP—250. Last fiscal year output 111,000 tons.
Sales Agency Bewley Darst Coal Co. Bristol, Tenn.

VIRGINIA-TENNESSEE COAL CO., INC
Now Red Ash Pocahontas Coal Co.

WISE COAL & COKE CO.
Wise Nos. 3, 5, 7 and 8 Mines, Drifts, Up and L. Banner Seam, 4 to 6 ft. thick.
PO—Dorchester, Va. SP—Same. CTY—Wise. RR—L. & N., Interstate.
PR—J. L. Kemmerer..New York, N.Y.
TR—W. E. Dexter, " "
GS—R. H. Allport...Dorchester, Va.
PA—W. W. Kemp, " "
EM—F. L. Henize, " "
MS—J. P. Hogan, " "
SM—H. Renfro, " "
CE—J. H. Allport....Barnesboro, Pa.
S of H—2 elec. loco. and mules. Track gauge 44 in.
S of M—Hand.
PP—Gen. units, 500 volts D. C., 2,300 volts A. C., 3 phase, 60 cycles and 1 pump.
EMP—125. Coke ovens, 120 Bee Hive. Last fiscal year output 80,000 tons.
Sales agency, Whitney-Kemmerer Co., Norton, Va.

YELLOW CREEK COAL & COKE CO.
Kilgore Mine, Drift, "Edwards" Seam, 3 to 4½ ft. thick.
PO—Wise, Va. SP—Same. (via Norton, Va.; CTY—Wise; RR—N. & W., L. & N., V. & S. W.
PR—G. D. Kilgore.....Norton, Va.
TR—Chas. T Kilgore .....Wise, Va.
GM—Chas. T. Kilgore, " "
PA—Chas. T. Kilgore, " "
SM—Chas. T. Kilgore, " "
GS—V. G. Moore, " "
MS—J. B. Moore, " "
EM—Scarborough & Dodson.Norton, Va.
S of H—Mules. Track gauge 42 in.
S of M—Elec. mach.
EMP—30. Last fiscal year output, 20,269 tons.
Sales Agency, Eastern Coal & Export Corp., Richmond, Va.

WASHINGTON

For List of Abbreviations See Page 498.

AMERICAN CANADIAN FUEL CO.
Out of business.

AMERICAN COAL CO.
Mines Nos. 6, 8 and 10, Slopes, Seam 4 to 6 ft. thick. Operate washery.
PO—Spiketon, Wash. SP—Same. CTY—Pierce. RR—N. P.
PR—M. V. Reinhart....Seattle, Wash.
GM—D. R. Sivern ....Spiketon, Wash.
PA—M. Oppenheimer, " "
SM—M. Oppenheimer, " "
MS—John Hutchinson.
EM—Edward Gibson, " "
MM—F. H. Cadwell, " "
S of H—Mules and rope. Track gauge 3 ft.
S of M—Hand and 2 comp. air mach.
PP—7 boilers, total 700 H. P., 2 gen. units, 550 volts D. C., 1 air comp, 1 pump.
EMP—280. Last fiscal year output 100,000 tons.
Sales agent, Consumers Fuel Co., Tacoma, Wash.

BUCODA COAL & DEVELOPMENT CO.
Slopes, "No. 3 Seam," 5½ to 6 ft. thick.
PO—Bucoda, Wash. SP—Same. CTY—Thurston. RR—N. P., G. N., and O. W. R. N., Main Line.
PR—R. A. Graham ....Bucoda, Wash.
TR—W. B. Graham, " "
GM—J. E. Graham, " "
MS—J. E. Graham, " "
GS—E. J. Medley, " "
PA—C. W. Graham, " "
CE—J. T. Graham, " "
EM—J. R. Delameter, " "
S of H—Rope. Track gauge 36 in.
S of M—Hand.
PP—Boiler, 80 H. P., 2 pumps.
Last fiscal year output 1,265 tons.

BOLCOM-SLIGH COAL CO.
PO—Ballard Station, Seattle, Wash.
PR—Chas. R. Sligh, Grand Rapids, Mich.
TR—W. Yale Henry, Seattle, Wash.

CARBON COAL & CLAY CO.
General Office, Henry Bldg., Seattle, Wash
Carbon & Daly Mines; Drift and Slope; Carbon Seam; 48 to 72 in. thick; operate washery.
PO—Bayne, Wash. SP—Same. CTY—King. RR—N. P. & C. M. & St. P.
PR—M. B. Daly.....Cleveland, O.
TR—S. H. Tollas.....Cleveland, Ohio.
GM—D. S. Hanley.....Bayne, Wash.
PA—D. S. Hanley, .. " "
MS—Andrew Collum, " "
SM—E. E. Scott, " "
EM—Chas. Nelson, " "
S of H—3 elec. loco. Track gauge 36 in.
S of M—Hand.
PP—3 Erie water tube boilers, total 450 H. P., 2 gen. units, 250 volts D. C.
EMP—125. Last fiscal year output, 87,000 tons.

CARBON HILL COAL CO.
Slope. Operate washery.
PO—Carbonado, Wash. SP—Same. CTY—Pierce. RR—N. P.
GS—J. F. Menzies..Carbonado, Wash.
EM—Frank Good, " "
MM—Frank Hammond, " "
S of H—Mules, rope, 2 elec. and 7 steam locos. Track gauge 36 in.
S of M—Hand.
PP—7 Erie City return tubular boilers, 3 gen. units, 550 volts D. C.
EMP—600. Coke ovens, 71 Bee Hive.
Sales agent, W. E. Pearce, Seattle, Wash.

CENTRAL COAL CO.
General Office, Crary Bldg., Seattle, Wash.
Grand Ridge Mine; Slope; Seam 48 to 144 in. thick; Operate Washery.
PO—Issaquah, Wash.; SP—Grand Ridge, Wash.; CTY—King; RR—N. P., North Bend Branch.
PR—C. J. Smith, ...Seattle, Wash.
TR—A. S. Kerry, " "
CE—H. F. Hawkins, " "
GM—A. Reynolds, ...Issaquah, Wash.
GS—A. Reynolds, " "
MS—J. J. Reynolds, " "
S of H—Mules.
S of M—7 Comp. air mach.
PP—2 Return tubular boilers, 1 compressor. Power purchased.
EMP—100. Developed to mine 600 tons daily, if needed.
Sales Manager, F. C. Ferree.

DEEP LAKE COAL CO.
Out of business.

DENNY-RENTON CLAY & COAL CO.
General Office, Seattle, Wash.
Taylor Mine; Shaft and Drift.
PO—Taylor, Wash; SP—Same; CTY—King; RR—Columbia & Puget Sound.
PR—Moritz Thomsen.....Seattle, Wash.
VPR—E. J. Mathews....Seattle, Wash.
Secy—E. J. Mathews, " "
TR—R. R. Spencer, " "
Asst. TR—F. A. Shillestad " "
Asst. Sec—F. A. Shillestad " "
Asst. GM—J. F. Keenan, " "
PA—G. Lingren, " "
Ass. Mgr—H. L. Smith " "
MS—B. F. Cake.....Renton, Wash.
W. E. Lemley, Taylor, Wash and W. L. Bryan.
S of H—Elec. loco.
S of M—Hand.
PP—Boiler, 600 H. P.
Sales Agent, H. J. Crowe, Seattle, Wash.

DURHAM COLLIERY CO.
General Office, Tacoma, Wash.
PO—Durham, Wash.; SP—Same; CTY—King; RR—C. M. & St. P., N. P.
PR—C. R. Claghorn, Palmer, Wash.
GM—C. R. Claghorn, " "
TR—C. A. Foster, Tacoma, Wash.
EM—W. L. McKay.
S of H—Mules.
S of M—Hand.
PP—2 Return Tubular Boilers; total, 150 H.P., Gen. Unit, 440 volts A. C., 3 Phase, 60 Cycles
Sales Agent, C. A. Foster, Tacoma, Wash.

EAST CREEK COAL CO.
General Office, Tacoma, Wash.
Mine No. 1, Drift, No. 3 Seam, 7 to 8 ft. thick.
PO—Ladd, Wash. SP—Same (Prepay). CTY—Lewis. RR—T. E., Ladd Branch.
PR—John Bagley .....Tacoma, Wash.
TR—J. G. Dickson.....Tacoma, Wash.
PA—G. D. Newbegin.....Ladd, Wash.
SM—B. E. Stanbey, " "
S of H—2 steam loco. Track gauge 36 in.
S of M—Hand.
PP—1 return tubular boiler, total 200 H. P., 1 gen. unit, 120 volts D. C.
EMP—40 to 75.
Sales agent, N. H. Latimer.

FAIRFAX MINE, INC.
Fairfax Mine, Drift and Slope, Seam 4 to 8 ft. thick. Operate washery.
PO—Fairfax, Wash. SP—Same. CTY—Pierce. RR—N. P., Buckley Br.
PR—W. B. Rust, Box 1605, Tacoma, Wash.
GS—G. E. Rockefeller..Fairfax, Wash.
PA—G. E. Rockefeller, " "
CE—G. E. Rockfeller, " "
EM—Harry Boyle.....Fairfax, Wash.
MM—M. Jonis, " "
EE—M. Jonis, " "
SCO—D. E. Brehm & Bros., Buyer C. T. Brehm, Fairfax, Wash.
S of H—2 elec. loco. Track gauge 26 in.
S of M—Hand.
PP—2 boilers, total 300 H. P., 2 gen. units, 500 volts D. C., 1 air comp., 1 pump.
EMP—100. Coke Ovens, 60, Bee Hive. Last fiscal year output, 38,426 tons.

FORD'S PRAIRIE COAL CO.
Ford's Prairie Mine; Slope; Seam 66 to 96 in. thick.
PO—Centralia, Wash. SP—Same. CTY—Lewis. RR—N. P.
PR—A. D. Foron ....Centralia, Wash.
TR—Henry Foron, " "
GM—A. D. Foron, " "
MF—R. Tarrach, " "
S of H—Mules and 1 steam loco.
S of M—Hand.
PP—2 Return tubular boilers. 100 H. P.
EMP—7. Last fiscal year output, 7,134 ons.

GALE CREEK COAL CO.
Gale Creek Mine; Slope; Seam 48 in. thick.
PO—Wilkeson, Wash.; SP—Same; CTY—Pierce; RR—N. P., Wilkeson Branch.
PR—Henry Hewitt, Jr., Tacoma, Wash.
TR—J. J. Hewitt, " "
GS—J. T. Lee, ...Wilkeson, Wash.
SCO—Barton Bros., " "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular boilers, total 500 H.P., gen. unit 220 volts A.C., 3 phase, 60 cycles, 250 volts D.C. Power purchased.
EMP—60. Last fiscal year output 30,000 tons.

HYDE COAL CO.
General Office, 122 King Street, Seattle, Wash.
Hyde Mine; Slope; McKay Seam, 52 to 56 in. thick. Operate washery.
PO—Cumberland, Wash.; SP—Rosemar Spur, Wash.; CTY—King; RR—N. P. Palmer Branch.
PR—Samuel Hyde. ....Seattle, Wash.
VPR—Philip Rowe. " "
Sec.—Maurice McMicken, " "

Continued on Next Page.

HYDE COAL CO.—Continued.
PA—Hallidie Machinery Co., Seattle, Wash.
CE—George Watkins Evans, Seattle, Wash.
MS—George Stonebridge, Cumberland, Wash.
S of H—Mules.
S of M—Hand.
PP—2 Frost return boilers, total 250 H.P., 2 gen. units 240 volts A.C., 3 phase, 60 cycles.
EMP—100. Output 10,000 tons.

ISSAQUAH & SUPERIOR COAL MINING CO., LTD.
General Office, 908 White Bldg., Seattle, Wash.
Drift Mine, Alvo No. 5, Muldoon.
PO—Issaquah, Wash. SP—Same. CTY—King. RR—N. P.
PR—A. R. Alvensleben, Vancouver, B.C
TR—J. H. Young, " "
GM—Walter Barly .....Seattle, Wash
GS—Walter Barly, " "
PA—L. W. Norman, " "
CE—Walter Barly, " "
MM—Andrew Neil, " "
MF—John Jones .....Issaquah, Wash
S of H—2 elec. loco.
S of M—24 comp. air mach.
PP—2 air comp.
EMP—300. Last fiscal year output 150,000 tons.
Sales agency, J. F. Grant, 908 White Bldg., Seattle, Wash.

LINCOLN COAL CO.
PO—Galvin, Wash.; CTY—Lewis; RR—O. W. R. & N.
No report.

MENDOTA COAL & COKE CO.
General Office, Centralia, Wash.
Mine No. 1, Slope, No. 3 Seam, 10 ft. thick. Operate washery.
PO—Mendota, Wash. SP—Same. CTY—Lewis. RR—C. E.
PR—B. H. Johnston..Centralia, Wash.
TR—B. H. Johnston, " "
GM—B. H. Johnston, " "
EM—Frank C. Knowles, " "
MS—J. G. McMullin..Mendota, Wash.
S of H—Rope and mules. Track gauge 3 ft.
S of M—Hand
PP—2 return tubular boilers, total 500 H. P., 1 pump.
EMP—125. Last fiscal year output 45,000 tons.
Sales agent, B. H. Johnston, Centralia, Wash.

MONARCH COAL COMPANY.
General Office, Centralia, Wash.
Monarch No. 1 Mine; Slope; Seam 96 in. thick.
PO—Kopiah, Wash.; SP—Centralia, Wash; CTY—Lewis; RR—Eastern Ry & Lumber Co.
PR—Conrad P. Olson..Portland, Oregon
GS—J. C. Kriebel.....Kopiah, Wash.
EM—F. C. Knowles,..Centralia, Wash.
S of H—Rope and mules.
S of M—Hand.
PP—1 Water Tube Boilers.
EMP—20. Last Fiscal year output 10,000 tons.

MONTEZUMA COAL MINES CO.
PO—Fairfax, Wash.; CTY—Piece.
No report.

NORTHWESTERN IMPROVEMENT CO.
General Office, Tacoma, Wash.
Seven mines in Washington, 2 in Montana.
PR—Wm. P. Clough..New York, N.Y
VP—T. Cooper .....St. Paul, Minn
PA—F. G. Prest. " "
TR—C. A. Clark, " "
GM—C. C. Andersen...Tacoma, Wash
Comptroller, M. P. Martin, Tacoma, Wash.
GS—J. F. Menzies ....Roslyn, Wash.
MM—E. W. McCanna, " "
Roslyn Nos. 3 and 6 Mines; Shaft; Drift; and Slope; Roslyn Seam;
PO—Roslyn, Wash. SP—Same. CTY—Kittitas. RR—N. P.
MS—Peter Bagley .....Roslyn, Wash.
S of H—Mules, rope and elec. loco.
S of M—Hand.
EMP—642. Last fiscal year output, 461,107 tons.
Cle Elum Mine, Slope.
PO—Cle Elum, Wash. SP—Same. Kittitas. RR—N. P.
MS—A. Odder.....Roslyn, Wash.
S of H—Mules, rope and elec. loco.
S of M—Hand.
EMP—246. Last fiscal year output, 148,091 tons.
Nos. 5 and 7 Mines, Slopes.
PO—Roslyn, Wash. SP—Same. CTY—Kittitas. RR—N. P.
MS—A. Odder.....Roslyn, Wash.
S of H—Mules, rope and elec. loco.
S of M—Hand.
EMP—385. Last fiscal year output, 262,031 tons.
Ravensdale Mine, Slope.
PO—Ravensdale, Wash. SP—Same. CTY—King. RR—N. P.
MS—R. D. Scott.....Ravensdale, Wash.
S of H—Mules, rope and elec. loco.
S of M—Hand.
EMP—234. Last fiscal year output, 127,972 tons.
Melmont Mine, Slope.
PO—Ravensdale, Wash. SP—Same. CTY—King. RR—N. P.
MS—R. D. Scott.....Ravensdale, Wash.
S of H—Mules, rope and elec. loco.
S of M—Hand.
EMP—93. Last fiscal year output, 65,093 tons.

NATIONAL COAL CO Inc.
General Office, Railway Exchange Bldg., Seattle, Wash.
National Mine; Slope and drift, Nos. 2, 1 0 Seams, 48 to 72 in. thick.
PO—Cumberland, Wash.; SP—Kenneth, Wash.; CTY—King; RR—C. M. & P. S., N. P.
PR—Stephen H. Green....Seattle, Wash.
GM—Stephen H. Green, " "
PA—Stephen H. Green, " "
GS—Edwin Husband..Cumberland, Wash.
EM—J. L. Parry, " "
MM—Alex. Gaugh, " "
MS—D. Davis, " "
S of H—1 Steam, 1 gasoline loco. and rope; track gauge 36 in.
S of M—3 Comp. air mach.
PP—5 Return tubular boilers, total 450 H. P., 1 compressor, 1 pump.
Sales Agent, A. S. Elmore, Seattle, Wash.

OCCIDENTAL COKING COAL CO.
General Office, Centralia, Wash.
Occidental Mine, Slope, Nos. 5 tnd 6 Seam, 37 ft. thick. Operate washery.
PO—Bayne, Wash. SP—Same. CTY—King. RR—N. P.. C. M. & S. P.
PR—H. B. Scott.....Burlington, Ia.
VP—B. H. Johnston..Centralia, Wash.
GS—B. H. Johnston, " "
PA—R. H. Johnston, " "
EM—F. C. Knowles, " "
S of H—Steam and mules. Track gauge 3 ft.
S of M—Hand.
EMP—35. Output during Dec. 1914., 2000 tons.

PACIFIC COAST COAL CO.
General Office, Seattle, Wash.
PR—J. C. Ford.....Seattle, Wash.
GM—J. C. Ford, " "
TR—J. W. Smith, " "
PA—W. E. Nichols, " "
Chief Eng—N. D. Moore, " "
EM—Ray Smith, " "
Mech. Eng—Robt. S. Sterling, " "
SM—C. P. Blanchard, " "
Mgr. of Mines—Wm. Hann, Black Diamond, Wash.
EE—J. H. Crooks, Black Diamond, Wash.
Sales Agency, N. Poston, Seattle, Wash.
Coal Creek Mine; Slope, Nos. 3, 4 and Muldoon Seams 48 to 72 in. thick; operate washery.
PO—New Castle, Wash.; SP—Coal Creek, Wash; CTY—King; RR—C. & P. S. New Castle Br.
MS—J. J. Jones....New Castle, Wash.
S of H—7 Elec. loco.; track gauge 36 in.
S of M—34 Comp. air mach.
PP—9 Return tubular boilers, toal 1275 H. P., 1 gen. unit 500 volts D. C., 2 compressors, 2 pumps.
EMP—325. Last fiscal year output 237,547 tons.
Cannon Mine; Slope, Gem and McKay Seams, 36 to 48 in. thick.
PO—Franklin, Wash.; SP—Same; CTY—King; RR—C. & P. S.
MS—R. Christiansen, Black Diamond, Wash.
SM—W. F. Mucho, Black Diamond, Wash.
S of H—5 Elec. mach. and rope; track gauge 36 in.
S of M—Hand.
PP—4 Return tubular arboilers, total 800 H. P., 1 gen. unit 500 volts D. C.
EMP—286. Last fiscal year output 43,363 tons.
Note—Mine and store closed May 1st.
No. 11 Mine; Slope, McKay Seam, 44 to 66 in. thick.
PO—Black Diamond, Wash.; SP—Same; CTY—King;; RR—C. & P. S.
MS—R. Christiansen, Black Diamond, Wash.
SM—E. P. Botting, Black Diamond, Wash.
S of H—8 Elec. loco. and rope; track gauge 36 in.
S of M—Hand.
PP—13 Return tubular boilers, total 1900 H. P., 4 gen. units 500 volts D. C.
EMP—439. Last fiscal year output 124,063 tons.
Burnett Mine; Slope, Nos. 1, 2 and 3 Seam, 42 to 60 in. thick.
PO—Burnett, Wash.; SP—Same; CTY—Pierce; RR—N. Pac.
MS—W. E. Maltby....Burnett, Wash.
SM—R. C. Shane, " "
S of H—5 Elec. loco.; track gauge 36 in.
S of M—4 Comp. air mach.
PP—8 Return tubular boilers, total 1000 H. P., 1 gen. unit 500 volts D. C., 1 compressor, 2 pumps.
EMP—285. Last fiscal year output 91,155 tons.
No. 14 Mine; Slope, McKay Seam, 48 to 72 in. thick.
PO—Black Diamond, Wash.; SP—Same; CTY—King; RR—C. & P. S.
MS—R. Christiansen, Black Diamond, Wash.
SM—Evan P. Botting, Black Diamond, Wash.
S of H—3 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 480 H. P., gen. units 500 volts D. C., 2 pumps.
EMP—161. Last fiscal year output 59,303 tons.
No. 12 and B Mines closed.

POCAHONTAS COAL & COKE CO.
General Office, Henry Bldg., Seattle, Wash.
Pocahontas Mine; Drift; Pocahontas Seam, 14 to 27 ft. thick.
PO—Palmer, Wash.; SP—Same; CTY—King; RR—N. P.
PR—J. R. Miller,.....Seattle, Wash.
GM—J. R. Miller, " "
GS—James A. Kelly, " "
EM—James A. Kelly, " "
PA—W. C. Miller, " "
MS—Manchester Walters, Palmer, "
S of H—Rope.
S of M—Hand.
PP—1 Return tubular boiler, 60 H.P. gen. unit 250 volts D.C.
Successors to Big Six Coal Co., Cannel Coal Co., Pocahontas Dev. Co.

POCAHONTAS DEVELOPMENT CO.
See Pocahontas Coal & Coke Co.

PUGET SOUND TRACTION LIGHT & POWER CO.
General Office, Seattle, Wash.
Renton Coal Mine, Slope, "Renton No. 3" Seam, 7 ft. thick. Operate washery.
PO—Renton, Wash. SP—Same. CTY—King. RR—N. P., C. M. & St. P., Colo. & P. S., Puget Sound Electric.
PR—A. W. Leonard....Seattle, Wash.
Asst TR—Frank Dabney, " "
GM—Al. Kempster, " "
PA—F. M. Hamilton, " "
MS—Lewis D. Jones ..Renton, Wash.
MM—D. C. Williams, " "
S of H—Mules, rope and 3 elec. loco.
S of M—Hand.
PP—6 return tubular boilers, 3 pumps.
EMP—300. Last fiscal year output 129,193 tons.
Sales agent, J. W. Bullock, 609 10th Ave., Seattle, Wash.

ROSE-MARSHALL COAL CO.
Succeeded by National Coal Co.

ROSLYN-CASCADE COAL CO.
General Office, S. Bellingham, Wash.
PR—F. B. Larrabee,....So. Bellingham Wash.
TR—Cyrus Gates, So. Bellingham, Wash
GM—Wm. Mackay .....Roslyn, Wash.
PA—Wm. Mackay, " "
EM—Jas. E. Ash, " "
Sales agent, John Ryczek. Roslyn, Wash.
Mine No. 1, Slope, "Roslyn Bed" Seam, 4 ft. 4 in. to 4 ft. 6 in. thick.
PO—Roslyn, Wash. SP—Ronald, Wash. CTY—Kittitas. RR—N. P., Roslyn Branch.
MS—Robt Scobie.....Roslyn, Wash.
S of H—Mules, gravity and steam. Track gauge 30 in.
S of M—Hand and 1 elec. mach.
PP—1 Boiler, 50 H. P.
EMP—114. Last fiscal year output 107,719 tons.
Mine No. 2 Slope, "Roslyn Bed" Seam, 4 ft. 4 in. to 4 ft. 6 in. thick.
PO—Roslyn, Wash. SP—Ronald, Wash. CTY — Kittitas. RR—N. P., Roslyn Branch.
MS—Jas. Ash .....Roslyn, Wash.
S of H—Mules and gravity. Track gauge 30 in.
S of M—Hand.
PP—2 boilers, total 100 H. P., 1 gen. unit, 445 volts A. C., 60 cycles.

ROSLYN COAL & COKE CO.
PO—Roslyn, Wash.; CTY—Kittitas.
No report.

ROSLYN FUEL CO.
General Office, Lowman Bldg., Seattle, Wash.
Beckman Nos 1, 2 and Summit Mines; Slopes and drifts; Roslyn Seam, 54 to 60 in. thick.
PO—Roslyn, Wash.; SP—Beckman, Wash.; CTY—Kittitas; RR—N. P., Roslyn Br.
PR—Preston Oakes.....Seattle, Wash.
GM—Charles E. Jones, " "
GS—Charles E. Jones....Seattle, Wash.
EM—Charles E. Jones, " "
MS—T. K. Jones.....Roslyn, Wash.
S of H—Mules and rope; track gauge 36 in.
S of M—Hand.
PP—5 Return tubular boilers, total 750 H. P., 2 gen. units 440 volts A. C., 5 pumps.
EMP—350. Last fiscal year output 400,000 tons.
Sales Agent, S. F. Buckingham, Seattle, Wash.

SCRANTON COAL MINING CO.
General Office, Tacoma, Wash.
Navy Mine; Slope and Drift.
PO—Cumberland, Wash.; SP—Navy Spur, Wash.; CTY—King; RR—N. P.
PR—E. Hutchinson, ...Tacoma, Wash.
GM—E. Hutchinson, " "
PA—E. Hutchinson, " "
TR—A. L. Hutchinson, " "
EM—W. J. Wood, " "
MS—D. W. Watkins, Cumberland, "
S of H—Mules; track gauge 36 in.
S of M—Comp. air mach. and hand.
EMP—75.
Sales Agent, F. M. Lane, Tacoma, Wash.
NOTE—Purchased the holdings of the Navy Development & Coal Mining Co.

SHELDON COAL CO.
Sheldon Mine.
PO—Chehalis, Wash. CTY—Lewis.
PR—W. D. Sheldon...Chehalis, Wash.
GS—B. H. Sheldon, " "
EMP—8. Last fiscal year output 2,100 tons.
State report.

SUNSHINE COAL CO.
Now Mendota Coal Co.

SUPERIOR COAL CO.
PO—Chehalis, Wash. CTY—Lewis. RR—N. P.
PR—J. G. Murphy....Chehalis, Wash.

SOUTH WILLIS COAL CO.
Winson Mine.
PO—Wilkeson, Wash. CTY—Pierce. RR—N. P.
PR—Abe Morris.....Wilkeson, Wash.
GS—Frank Merritt, " "
EMP—28. Last fiscal year output 25,096 tons.
State report.

WASHINGTON UNION COAL CO.
General Office, Omaha, Neb.
Tono Mine, Slope and Drift, Hannaford Seam, 15 ft. thick.
PO—Tono, Wash. SP—Same. CTY—Thurston. RR—O. W. R. & N., Tono Branch.
PR—F. A. Manley .....Omaha, Neb.
TR—A. H. Doane ....Cheyenne, Wyo.
MS—E. S. Brooks .....Tono, Wash.
PA—E. S. Brooks, " "
EM—R. B. Ober, " "
MM—A. Turnball, " "
EE—A. Turnball, " "
SC0—Tono Store. Buyer, F. O. Nelson, Tono, Wash.
S of H—Mules, rope and 2 gaso. loco. Track gauge 30 in.
S of M—Hand.
PP—2 Marme return tubular boilers, total 300 H. P., 1 gen. unit, 2,300 volts A. C., 3 phases, 60 cycles, 3 elec. pumps.
EMP—175. Last fiscal year output 109,000 tons.
Sales agent, A. C. Gillespie, Portland, Ore.

WHATCOM COUNTY COAL CO.
Blue Canyon Mine, Drift Blue Canyon Seam 24 to 240 in. thick. Operate washery.
PO—Bellingham, Wash. R.D. No. 3. SP Blue Canyon, Wash.; CTY—Whatcom; RR—N. P.
PR—R. C. Clise .....Seattle, Wash.
TR—A. M. Hadley....Bellingham, Wash.
GM—Andrew Ecklund..Bellingham, Wash. R. D. No. 3.
S of H—Gravity. Track gauge 30 in.
S of M—Hand and 2 comp. air mach.
PP—Water power, 1 air comp.
EMP—18. Last fiscal year output 7,500 tons.
Sales agent, Turnkey & Sons, Bellingham, Wash.

WILKESON COAL & COKE CO.
Wilkeson Mine, Drift, Wilkeson Seam, 18 in. to 6 ft. thick. Operate washery.
PO—Wilkeson, Wash. SP—Same. CTY—Pierce. RR—N. P. Ry.
PR—Henry Hewitt, Jr., Tacoma, Wash.
GS—J. T. Lee.....Wilkeson, Wash.
MS—Abe Morris, " "
S of H—Mules and 5 steam locos. Track gauge 36 in.
S of M—Hand.
EMP—200. Last fiscal year output 125,330 tons.
Coke ovens, 100 Bee Hive.

WEST VIRGINIA

For List of Abbreviations See Page 498.

ABRAMS CREEK COAL & COKE CO.
Oakmont Mine; Drift; Upper Freeport Seam; 48 to 52 in. thick.
PO—Oakmont, W. Va.; SP—Same; CTY—Mineral; RR—West in Maryland, Elk Garden Br.
PR—S. D. Brady....Fairmont, W. Va.
TR—A. P. Brady, " "
MS—James Christopher..Oakmont, W.Va.
EE—James Christopher, " "
SCO—Company Store, buyer, Earl Blaker, Oakmont, W. Va.
S of H—1 Elec. and 1 Storage Battery loco.; track gauge 42 in.
S of M—Hand and 5 Elec. mach.
PP—Boilers, 150 H. P.
EMP—175.

AJAX COAL CO.
Ajax Mine; Drift; Sewell Seam; 30 to 42 in. thick.
PO—Fayette, W. Va.; SP—Newlyn, W. Va.; CTY—Fayette; RR—C. & O. Main Line.
PR—S. M. Dunbar....Fayette, W. Va.
GM—S. M. Dunbar, " "
TR—J. T. McMasters, " "
PA—Aaron Carver, " "
MS—Newton Elkins, " "
EM—Settle Engineering Co.
S of H—1 Elec. loco.; track gauge 40 in.
PP—2 pumps.
EMP—50. Last fiscal year output 30,000 tons. Sales Agency, W. Va. Coal Co.
Successors to Manufacturers & Consumers Coal Co.

AJAX CONSOLIDATED COAL CO., INC.
General Office, Baltimore, Md.
2 Mines in West Va., and 4 in Pa.
Drift Mines; Kittanning and Bakerstown Seam.
PO—Emoryville and Hubbard, W. Va.; SP—Same; CTY—Mineral; RR—W. Md., Elk Garden and W. Va. Div.
PR—Richard M. Duvall, Baltimore, Md.
VP—John C. Lewis, " "
GM—James G. Pugh, " "
TR—Edwin W. Adams, " "
Secy—Daniel Cloud, " "
GS—D. J. Riordan.....Fort Hill, Pa.
S of H—Mules.

ALEMMA COAL CO.
Drift Mine; No. 2 Gas Seam, 96 to 102 in. thick.
PO—Switzer, W.Va.; SP—Same; CTY—Logan; RR—C. & O., L. & S. Branch.
PR—J. M. Vest, ...Switzer, W.Va.
GM—J. M. Vest, " "
TR—Fred Prichard..Huntington, W. Va.
S of H—Mules, track gauge 48 in.
S of M—1 Elec. mach.
PP—Power purchased; 1 gen. unit 250 volts D.C.
Sales Agency, Island Creek Coal Co., Switzer, W.Va.

ALASKA COAL & COKE CO.
Mine worked out.

AILEEN COAL CO.
General Office, Mt. Hope, W. Va.
Aileen Mine; Slope, Sewell Seam, 40 in. to 60 in. thick.
PO—Keeneys Creek, W. Va.; CTY—Fayette; RR—C. & O.
PR—W. E. Deegans....Mt. Hope, W.Va.
TR—John Faulkner, " "
GM—Wm. Farrell..Keeneys Creek, W.Va.
PA—Wm. Farrell, " "
MS—Wm. Farrell, " "
SCO—Address the Company, " "
CE—Philip Konrad, Kanawha Falls, W.Va.
S of H—1 Storage battery, loco and mules.
S of M—1 Elec. mach. and hand.
PP—Gen. units 250 volts D. C., power purchased.
EMP—75. Last fiscal year output 30,000 tons.
Successors to the Holliday Coal Co.

ALGOMA COAL & COKE CO.
Piney and Northfork, Drifts, Poca. Seam No. 3.
PO—Algoma, W. Va. SP—North Fork, W. Va. CTY—McDowell. RR—N. & W.
GM—Wm. J. Beury, 3432 N. 17th St., Philadelphia, Pa.
ResMgr—J. J. Huddleston. Algoma, W.Va
PA—B. F. Frame, " "
EM—G. Wilcox, " "
MS—J. F. Logan, " "
SM—W. L. Craft.....Algoma, W.Va.
S of H—Elec. loco.
S of M—Hand.
PP—Gen. units, 250 volts A. C.
Coke Ovens, 225.
EMP—300.

ALGONQUIN COAL CO.
General Office, Matoaka, W.Va.
Drift Mine; No. 3 Poca. Seam, 60 in. thick.
PO—Algonquin, W.Va.; SP—Same; CTY—Mercer; RR—N. & W., Virginian.
PR—J. A. Renehan, No. 1 Broadway, New York, N.Y.
Secy—A. H. Dary, No. 1 Broadway, New York, N.Y.
GM—J. H. Parrott, McComas, W.Va.
PA—J. C. Stras, ...Matoaka, W.Va.
MS—J. C. Stras, " "
S of H—1 Elec. loco.; track gauge 18 in.
S of M—Elec. mach.
PP—Power purchased.

ALLBURN COAL & COKE CO.
See Kentucky data.

ALMA-THACKER FUEL CO.
General Office, Columbus, O.
Drift Mine; Freeport, Thacker, Alma, Freeburn Seam 54 in. thick.
PO—McCarr, Ky.; SP—McCarr Siding, W. Va.; CTY—Mingo; RR—N. & W., Tug River & Ky.
PR—C. Cohenour, Columbus, O.
GM—C. Cohenour, " "
PA—C. Cohenour, " "
TR—D. N. Postlewaite, Columbus, O.
MS—G. W. Coyle, Matewan, W. Va.
S of H—3 Elec., 1 Steam loco.; track gauge, 48 in.
S of M—4 Elec. Mach.
PP—3 Return Tubular Boilers; total, 450 H.P., Gen. Unit, 250 volts D. C.
Successors to the Pomeroy Fuel Co.

ALPHA-POCAHONTAS COAL CO.
Alpha Mine; Drift, Beckley Seam, 54 to 72 in. thick.
PO—Alpoca, W. Va.; SP—Taft, W. Va.; CTY—Wyoming; RR Virginian.
PR—F. M. Lee.....Alpoca, W.Va.
GM—F. M. Lee, " "
PA—F. M. Lee, " "
TR—G. H. Wilkins, " "
EM—J. P. Irwin, " "
CE—E. M. Merrill.....Beckley, W.Va.
S of H—Elec. loco.
S of M—Elec. mach.
PP—Gen. units 250 volts D. C., 440 volts A. C., 3 phase, 60 cycles.
New operation.

AMERICAN COAL CO.
General Office, No. 1 Broadway, New York.
PR—W. De L. Walbridge, Broadway, New York.
TR—Geo. M. Bowlby, Broadway, New New York.
GS—J. H. Parrott McComas, W. Va.
PA—J. H. Parrott, " " "
EM—C. H. Bloom, " "
SB—J. Tracy Walker, " " "

PINNACLE Mine, Drift No. 3, Pocahontas Seam, 4 ft. 6 in. thick. Operate washery.
PO—McComas, W. Va. SP—Mora, W. Va. CTY—Mercer. RR—N. & W. Crane Creek Branch.
MS—J. Tracy Walker, McComas, W Va.
S of H—Mules and 3 elec. loco. Track gauge 48 in.
S of M—Hand and 5 elec. machines.
PP—7 boilers, 875 H.P. 3 Gen. units, 550 volts D.C.
EMP—325—Last fiscal year output, 212,720 tons. Coke ovens, 200 Bee Hive.

Crane Creek Mine, Drift No. 3, Pocahontas Seam, 4 ft. 8 inches thick. Operate washery.
PO—McComas, W. Va. SP—Mora, W. Va. CTY—Mercer. RR—..N. & W., Crane Creek Branch.
S of H—Mules and 3 elec. loco. Track gauge 44 inches.
S of M—Hand. and 5 elec. machines.
PP—Elec. for inside furnished by Pinnacle Mine. Buy power for outside work.
EMP—350. Last fiscal year output 232,789 tons. Coke ovens, 200 Bee Hive.

Piedmont Mine, Drift, No. 3 Pocahontas Seam, 4 ft. 6 in. thick.
PO—Widemouth, W. Va.; SP—Same; CTY—Mercer; RR—N. & W., Widemouth Br.
S of H—Mules, 1 elec. and 1 steam loco. Track gauge 56½ inches. inches.
S of M—7 Elec. machines.
PP—Buy power.
EMP—175. Last fiscal year output 109,761 tons.

AMHERST COAL COMPANY.
See Virginia-Buffalo Coal Co.

AMIGO COAL CO.
General Office, Sullivan, W.Va.
Amigo Mines; Drift; Poca No. 3 Seam, 48 in. thick.
PO—Tams, W.Va.; SP—Stone Coal, W.Va.; CTY—Raleigh; RR Virginian.
PR—W. W. Koriner, Sullivan, W.Va.
TR—J. A. Wood, " "
GM—J. A. Wood, " "
GS—Fred S. Wood, " "
PA—Fred S. Wood, " "
EM—Fred S. Wood, " "
S of H—Elec. loco.; track gauge 44 in.

ANCHOR COAL CO.
Anchor Mine, Drift, Seam 7 to 9½ ft. thick.
PO—Highcoal, W. Va. SP—Same. CTY—Boone. RR—Chesapeake & Ohio, Coal River Extension, Cabin Creek Branch.
PR—Lute Hornickel.....Cleveland, O.
TR—Lute Hornickel, " "
GM—Lute Hornickel, " "
PA—Lute Hornickel, " "
GS—G. H. Hornickel. Highcoal, W. Va.
EM—J. E. B. Eaton..Charleston, W. Va.
SM—S. R. Stacker..Highcoal, W.Va.
S of H—4 elec. loco. Track gauge 42 in.
S of M—4 elec. mach.
PP—3 Erie City return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C.
Last fiscal year output 82,000 tons.
Sales agency, Anchor Coal Co., Cleveland, O.

ANTLER COAL CO.
General Office, Fairmont, W. Va.
PR—T. W. Arnett....Fairmont, W.Va.
GM—T. W. Arnett, " "
PA—T. W. Arnett, " "
TR—B. H. McGinley, " "
GS—U. N. Arnett, " "
CE—West Virginia Eng. Co., " "
SCO—Antler Coal Companies Stores.
Sales Agent, T. W. Arnett, Fairmont, W.Va.

Grant Mine; Drift, Pgh. Seam, 84 to 108 in. thick.
PO—Uffington, W. Va.; SP—Rand Bottom, W. Va.; CTY—Mongalia; RR—B. & O.
MS—E. O. Perky....Uffington, W. Va.
S of H—Mules.
S of M—Hand.
EMP—45. Last fiscal year output 36,000 tons.

Katherine No. 2 and Thompson Mine, Drift, Pgh. Seams, 84 to 108 in. thick.
PO—Lumberport, W. Va.; SP—Same; CTY—Harrison; RR—B. & O.
MS—Jos Reynolds, Lumberport, W. Va.
S of H—Mules.
S of M—Hand.
EMP—55. Last fiscal year output 64,000 tons.

Hero Mine; Drift; Pgh. Seam.
PO—Lumberport, W. Va., SP—Same; CTY—Harrison; RR—B. & O.
MS—J. R. Elsess....Lumberport, W.Va.
S of H—Mules.
S of M—Hand.

ARACOMA COAL CO.
Aracoma Nos. 1 and 2 mines, Drifts, Island Creek Seam, 5 ft. 8 in. to 6 ft. 5 in. thick.
PO—Logan, W. Va. SP—Same. CTY Logan. RR—C. & O.
PR—A. J. King, Charleston, W. Va.
TR—C. M. Galway....Pocahontas, Va.
GM—A. J. King, Charleston, W. Va.
PA—A. J. King, " " "
EM—A. J. King, " " "
MS—F. E. King, Logan, W. Va.
SM—I. B. Early.....Logan, W.Va.
S of H—7 Elec. loco.; track gauge 44 in.
S of M—6 Elec. mach.
PP—2 Return tubular boilers, total 400 H.P. 3 Gen. units, 2300 volts A.C. 3-phase 60-cycle, and 250 volts D.C.
EMP—225. Last fiscal year output. 225,000 tons. Sales Agents, Wyatt Coal Company, Charleston, W. Va.

ARGYLE COAL CO.
General Office, Huntington, W. Va.
Argyle Mine, Drift, Winifrede Thacker Seam, 68 to 84 in. thick.
PO—Yolyn, W. Va.; SP—Same; CTY—Logan; RR—C. & O.
PR—George M. Jones..Huntington, W.Va.
TR—E. J. Payne, " "
GM—J. N. Schweitzer, Amherstdale, W.Va.
PA—J. N. Schweitzer, " "
CE—W. G. Wilkins Co., Logan, W. Va.
MS—W. T. Harvey.....Yolyn, W.Va.
MM—I. L. Ward, " "
EE—I. L. Ward. " "
S of H—1Storage battery, elec. loco. and mules.
S of M—2 Elec. mach.
PP—Power purchased.
EMP—40. Last fiscal year output 45,564.96 tons.
Sales Agency, John T. Hesser Coal Co., Cincinnati, O.

ARLINGTON COAL & COKE CO.
Drift Mine, Poca No. 3 Seam.
PO—McDowell, W. Va. SP—North Fork, W. Va. CTY—McDowell. RR—N. & W.
GM—Morriss Watts..McDowell, W.Va.
PA—Morriss Watts, " "
MS—W. M. Norriss, " "
SM—J. J. Delp, " "
S of H—Elec. loco.
S of M—Hand.
PP—1 gen. unit, 250 volts D. C., 3 boilers.
EMP—175.
Coke oveus—159.

ATLANTIC COAL & COKE CO.
General Office, 731 Land Title Bldg., Philadelphia, Pa.
Atlantic Mine, Drift, Freeport Seam.
PO—Tunnelton, W. Va. SP—Same. CTY—Preston. RR—W. Va., No. R. R.
GM—C. E. Sharpless....Cresson, Pa.
PA—J. E. Wilkinson. Philadelphia, Pa.
EM—F. M. McDaniels. Clarksb'g, W.Va
S of H—Mules and elec. loco.
S of M—Hand.
PP—Gen. units, 500 volts D. C., 4 boilers, 600 H. P.
Note—Idle at present.

ASHLAND COAL & COKE CO.
Ashland and Graeber Mines; Drift; Pocahontas No. 3 Seam, 4½ to 5½ ft. thick. Washery.
PO—Ashland, W. Va. SP—Crumpler, W. Va. CTY—McDowell, RR—N. & W., Northfork Branch.
PR—W. J. Richards, Pottsville Pa.
TR—G. C. Graeber, Shamokin, Pa.
GM—W. A. Phillips, Ashland, W. Va.
PA—T. J. O'Neil, Ashland, W. Va.
MS—T. J. O'Neil, " " "
EM—C. A. Brown, " " "
EE—C. F. Dwyer, " " "
SM—W. W. Greer, " " "
S of H—4 Elec. loco. Track gauge 48 in.
S of M—Hand, 4 Elec. and 6 Comp. air mach.
PP—8 Water tube and 1 return tubular boilers. B&W., total 1,100 H. P., 4 gen units, 500 volts D.C. 1 compressor.
EMP—350. Last fiscal year output. 225,000 tons. Coke ovens 410, Bee Hive. Sales agency, Castner, Curran & Bullitt, Philadelphia, Pa.

AUSTEN COAL & COKE CO.
Austen Nos. 1 and 2 Drift and Slope, Up-Freeport Seam, 4½ ft. thick.
PO—Austen, W. Va. SP—Same. CTY—Preston. RR — B. & O., Raccoon Valley Branch.
PR—C. H. Zehnder, 90 West St., New York. N. Y.
TR—W. J. Wilson, 40 Wall St., New York. N. Y.
PA—F. W. Horchler, Austen W. Va.
MS—F. W. Horchler, " " "
MF—F. H. Jones and J. F. Cook, Austen, W. Va.
EM—J. V. Fundebark, Kingwood, W. Va.
MM—C. S. Wiles, Austen, W. Va.
EE—C. S. Wiles, Austen, W. Va.

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AUSTEN COAL & COKE CO.—Continued.
SM—Geo. M. Frazier, Austen, W. Va.
S of H—5 Elec. loco. and mules. Track gauge 36 and 42 in.
S of M—6 Elec. mach. and hand.
PP—3 Return tubular Union I. Wks. boilers, total 450 H.P., 2 gen units 550 volts D.C., 2 pumps
EMP—350. Coke ovens, 228 Bee Hive.

AVON COAL CO.
General Office, St. Mary's O.
Avon Mines, 3 openings, Drifts, Eagle and Island Creek seam 66 in. thick.
PO—Accoville, W. Va SP—Same. CTY Logan. RR—C. & O., Guyan Valley Branch.
PR—L. G. Neely.....St. Mary's O.
TR—M. K. Clover, " "
GM—S. E. Scholl, Accoville, W. Va.
PA—S. E. Scholl, " " "
MS—S. E. Scholl, " " "
EM—A. C. Dawson, " " "
MM—Walter Trail, " " "
S of H—3 Elec. loco. and mules. Track guage 42 in.
S of M—5Elec..mach.
PP—4 Return tubular boilers, total 600 H.P. Gen. unit 200 K.W. 250 volts D. C., 2 pumps.
EMP—125. Last fiscal year output, 111,767 tons.
Sales agent, F. G. McLaughlin, Cincinnati, O.

BABCOCK COAL CO.
General Office, Frick Bldg., Pittsburgh, Pa.
PR—E. V. Babcock, Pittsburgh, Pa.
TR—F. R. Babcock, "
GM—R. M. Smith, Landisburg, W. Va.
PA—R. M. Smith, Landisburg, W. Va.
CE—W. H. Cunningham, Huntington, W. Va.
EM—O. D. Amick, Cliff Top, W. Va.
EE—G. V. Behan, Sewell, W. Va.
SCO—Davis Supply Co., buyer, Mr. Huff, Pittsburgh, Pa. Sales agency, C. & O. Coal Agency Co., Richmond, Va.
Cliff Top No. 3 Mine. Drift, Sewell seam, 2 ft. 1 in. to 2 ft. 10 in. to 4 ft. thick.
PO—Cliff Top, We Va. SP—Sewell, W. Va. CTY—Fayette. RR—C. & O., B. C. & C. Ry. Co. branch.
MS—W. L. Herndon, Cliff Top, W. Va.
SM—H. N. Harison, Sewell W. Va.
S of H—1 Elec. loco. and mules. Track gauge 42 in.
S of M—6 Elec. mach.
PP—Boiler, 120 H. P. gen unit 250 volts D. C., 2 compressors and 2 pumps.
EMP—75. Coke Ovens, 193 Bee Hive. Last fiscal year output, 40,500 tons.
Cliff Top No. 4, Drift, Sewell Seam, 3 ft. 2 in to 4 ft. thick.
PO—Cliff Top, W. Va. SP—Sewell, W. W. Va. CTY—Fayette. RR—C.&O., B.C.&C.RY.Co.
MS—W. L. Herndon, Cliff Top, W. Va.
SM—O. T. Myles, Cliff Top, W. Va.
S of H—Mules. Track gauge, 42 in.
S of M—Hand.
EMP—100. Last fiscal year output, 42,400 tons.

BAILEY-WOOD COAL CO.
General Office, Glen Jean, W. Va.
Bailey Wood mine, Drift, Beckley Seam, 4½ to 6 ft. thick.
PO—MacAlpin. SP — Woodbay CTY—Raleigh. RR—Virginian, Winding Gulf Branch.
PR—C. B. Lee,.. Glen Jean, W. Va.
TR—Thos. Nichol, " "
GM—Thos. Nichol, " "
PA—Thos. Nichol, " "
GS—J. C. Baker, MacAlpin, W. Va.
CE—T. W. Sprague, Boston, Mass.
EM—E. C. Minter.....MacAlpin, W.Va.
S of H—6 Elec. loco.; track gauge 44 in.
S of M—Hand and 1 Elec. mach.
PP—3 Stanwood, Houston & Gamble Return tubular boilers, total 600 H.P. 2 gen. units 250 volts D. C., 1 pump.
EMP—150 Last fiscal year output 110,000 tons. Sales Agent, C. G. Blake Co., Cincinnati, O.; G. E. Warren Co., Boston, Mass.

BALLINGER COAL CO.
Ballinger Nos. 1 and 2 Mines, Drifts, Sewell Seam.
PO—Nuttallburg, W. Va. SP—Ballinger, W. Va. CTY—Fayette. RR—C. & O.
GM—Geo. Holland....Winona, W. Va.
PA—W. H. Holland, Jr., Winona, W. Va.
EM—Geo. Holland ....Winona, W. Va.
MS—John Ohlinger..Nuttallburg, W. Va
SM—Sol. Holland.....Winona, W. Va
S of H—Elec. loco. and mules
S of M—Hand.
EMP—135.

BARNARD COAL CO.
Now J. Edgar Long Coal Co.

BEECH COAL CO.
Drift Mine; No. 2 Gas Seam, 54 to 66 in. thick.
PO—Sharples, W. Va.; SP—Same; CTY—Logan; RR—C. & O.
PR—Julian Hill, ...Madison, W. Va.
PA—Julian Hill, " "
TR—O. C. Chambers.
GS—Dell Hill, ...Sharples, W. Va.
CE—Dell Hill, " "
S of H—Elec. loco.; track gauge 42 in.
S of M—Elec. mach.
PP—Power purchased.
Sales Agency, W. N. Griffith, Blufton, O.

BEECH GROVE COAL CO.
PO—Mason, W. Va.
No report.

BEECHWOOD COAL & COKE CO.
Mines Nos. 1 and 2, Drifts, Fire Creek Seam, 4 to 5 ft. thick.
PO—Claremont, W. Va. SP—Same. CTY—Fayette. RR—C.&O.
PR—C. C. Beury, Claremont, W. Va.
TR—C. C. Beury, " "
GM—C. C. Beury, " " "
GS—E. L. Hawley, " " "
PA—E. L. Hawley, " " "
CE—S. H. Bridge, Quinnimont, W. Va.
EM—S. H. Bridge, Quinnimont, W. Va.
SCO—Beechwood Coal & Coke Co., buyer, E. L. Hawley.
S of H—Rope, mules and 1 gasoline motor.
S of M—Hand.
PP—6 boilers, total 500 H. P.
EMP—150. Last fiscal year output, 85,000 tons.
Sales Agency, New River Coal Co.

BELL COAL MINE CO. OF CINCINNATI.
General Office, Cincinnati, O.
Drift Mine; Seam 48 in. thick.
PO—Roderfield, W.Va.; SP—Same; CTY—McDowell; RR—N. & W.
PR—D. E. Richards, Cincinnati, O.
GM—D. E. Richards, " "
TR—A. H. Richards, " "
MS—H. H. Drake, Roderfield, W. Va.
S of H—Mules and elec.
S of M—Hand.
Successors to the Vaughan Coal & Coke Co.

BELMONT COAL CO.
See Winifrede Coal Co.

BEN FRANKLIN COAL CO. OF W. VA.
General Office, Moundsville, W. Va.
1 Mine in West Virginia, 2 Mines in Penna.
Panama Mine; Shaft, Pgh. Seam, 67 in. thick.
PO—Moundsville, W. Va.; SP—Same; CTY—Marshall RR—B. & O.
PR—M. J. McQuade..Moundsville, W.Va.
TR—M. J. McQuade, " "
GM—M. J. McQuade, " "
GS—W. Lowther, " "
MS—W. Lowther, " "
EE—C. M. Bennett, " "
S of H—3 Elec. loco. and 2 storage batteries; track gauge 44 in.
S of M—5 Elec. mach.
PP—3 Return tubular boilers, total 450 H. P., 2 gen. units 250 volts D. C., 1 pump.
EMP—135. Last fiscal year output 119,000 tons.

BENGAL COAL CO.
General Office, Huntington, W. Va.
Bengal Mine; Drift, Eagle Seam, 60 to 84 in. thick.
PO—Kistler, W. Va.; SP—Same (Prepay to Accoville, W. Va.) RR—C. & O., Guyan Div.
PR—T. F. Bailey....Huntington, W.Va.
TR—W. H. Cunningham, " "
GM—A. E. Morgan.....Kistler, W.Va.
PA—A. E. Morgan, " "
MS—A. E. Morgan, " "
S of H—1 Elec. loco. and mules; track gauge 44 in.
S of M—3 Elec. mach.
PP—2 Phoenix return tubular boilers, total 300 H. P., gen. unit 275 volts D. C.
EMP—25. Last fiscal year output tons.

BEURY BROS. COAL & COKE CO.
Echo Mine Shaft, Fire Creek and Sewell Seams 42 to 60 in. thick.
PO—Beury, W. Va.; SP—Same; CTY—Fayette; RR—C. & O.
PR—T. C. Beury....Charleston, W.Va.
SM—C. D. McCoy, " "
TR—H. B. Beury.....Beury, W.Va.
GM—H. B. Beury, " "
PA—M. L. Richmond, " "
MS—W. L. McDaniel, " "
EM—P. Konrad..Kanawha Falls, W.Va.
S of H—Steam loco. and gravity; track gauge 44 in.
S of M—Hand.
PP—1 pump.
EMP—125. Last fiscal year output 41,000 tons.
Sales Agency, New River Co.

BIG BEND COAL CO.
Big Bend Mine, Drift.
PO—Dimmock, W. Va. CTY—Fayette.
PR—B. B. Buster...Dimmock, W.Va.
TR—Ernest Echols, " "
PA—Ernest Echels, " "
GM—J. H. Dempsey, " "
S of H—Mules and rope.
S of M—Hand.

BIG EAGLE MINING CO.
Big Eagle Mine; Shaft, Eagle Seam, 60 to 72 in. thick.
PO—Ottawa, W. Va.; SP—Same; CTY—Boone; RR—C. & O., Coal Run Br.
PR—J. M. Moore.....Ottawa, W.Va.
TR—J. M. Moore, " "
PA—J. M. Moore, " "
EM—W. A. Garrett, " "
EE—W. L. Keyser, " "
SCO—The Coal River Co., " "
S of H—Gravity; track gauge 44 in.
S of M—1 Elec. mach.
PP—Power purchased, 1 pump.

BIG VEIN COAL CO.
General Office, Baltimore, Md.
Shaw Mine; Drift; Bakerstown Seam; 42 in. thick.
PO—Shaw, W. Va.; SP—Big Vein Siding, W. Va.; CTY—Mineral; RR—Western Maryland.
PR—Frank J. Taylor....Baltimore, Md.
GM—Frank J. Taylor, " "
TR—John C. Wolf, " "
MS—S. S. Harvey.....Shaw, W. Va.
S of H—Mules.
S of M—Hand.
PP—Boiler, 150 H. P.
EMP—60. Last fiscal year output 22,000 tons.
Sales Agency, Blain Parke Coal & Coke Co., Philadelphia, Pa.

BLACK BAND FUEL CO.
General Office, No. 1 Broadway, New York, N. Y.
Black Band Nos. 1 and 2 Mines; Drift, Black Band Seam, 38 to 52 in. thick.
PO—Olcott, W. Va.; SP—Brownland, W. Va.; CTY—Kanawha; RR—C. & O., Kanawha Central Br.
PR—Charles S. Thomas.
TR—Clarence Fubrer.
GS—H. S. Lingle.....Olcott, W.Va.
PA—H. S. Lingle, " "
CE—Romine & Snider, " "
SCO—Address the Company.
S of H—6 Elec. loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P.
EMP—300. Last fiscal year output 120,000 tons.

BLACK BETSEY COAL MINING CO.
Black Betsy Mine, Nos. 1 and 2, drift; Pgh. Seam, 5 ft. thick.
PO—Black Betsy, W. Va. SP—Same. CTY—Putnam. RR—Kanawha & Michigan.
PR—E. T. O'Connor.
TR—Alfred S. Clarke.
GM—T. Woodward, Black Betsy, W Va.
PA—T. Woodward, Black Betsey, W. Va.
GS—T. Woodward, Black Betsey, W. Va.
MS—Chas. R. Suntrock, Black Betsey, W. Va.
CE—John C. Child, Black Betsey, W. Va.
MM—Arthur Bownlow, Black Betsey, W. Va.
EE—Frank Davidson, Black Betsey, W. Va.
SM—Everett Scholz, Black Betsey, W. Va.
S of H—4 Elec. loco. Track gauge 36 in.
S of M—Hand.
PP—2 Boilers, total 300 H. P. gen. units 2200 volts, A. C. 200 volts, D. C.
EMP—450. Last fiscal year output, 250,000 tons.

BLACK HAWK COLLIERY COMPANY.
Black Hawk Mine. Drift No. 2 Gas Seam; 4½ to 5 ft. thick.
PO—Big Creek, W. Va. SP—Same. CTY—Logan. RR—C. & O., Guyan Valley Branch.
PR—Norman Maddocks, Detroit Mich.
TR—A. W. Bosley, " "
GM—A. W. Bosley, " "
MS—J. L. Dawson, Big Creek, W. Va.
PA—J. L. Dawson, " " "
EM—Reddow & McCorkle, Logan, W. Va.
S of H — Mules. Track gauge 48 in.
EMP—25. Last fiscal year output 18,000 tons.

BLACK WOLF COAL & COKE CO.
Black Wolf Mine, Drift, No. 3 Seam.
PO—Dearing, W. Va. SP—Black Wolf, W. Va. CTY—McDowell. RR—N. & W.
GM—Morriss Watts....Dearing, W.Va.
PA—C. L. Thorne, " "
EM—Wm. Schofield, " "
MS—S. G. Bralley, " "
SM—C. L. Thorne, " "
S of H—Elec. loco.
S of M—Elec. mach.
PP—2 boilers, 400 H. P., gen. units, 500 volts D. C.
EMP—225.

BLACKSBURG COAL CO.
General Office, Stock Exchange Bldg., Philadelphia, Pa
Drift Mine; No. 2 Gas; No. 5 Block and Eagle Seam.
PO—Palmer, W. Va.; CTY—Braxton.
GM—L. O. Knipp, Philadelphia, Pa.

BLAINE MINING CO.
General Office No. 1 Broadway, New York, N. Y.
Potomac Manor Nos. 1 and 2 mines, Drift; Davis No. 6 Seam, 5½ ft. thick.
PO—Potomac Manor, W. Va.; SP—Same. CTY—Mineral. RR — W. M.
PR—T. B. Davis.....New York, N. Y.
TR—Abel Mishler, " " " " "
GM—Jas. G. Boyd, Potomac Manor, W. Va.
PA—Jas. G. Boyd, Potomac Manor, W. Va.
MS—Jas. G. Boyd, Potomac Manor W. Va.
EM—George Boyd, Potomac Manor, W. Va.
MM—Lafe O'Haver, Potomac Manor, W.Va.
SM—W.N.Buzzerd, Potomac Manor, W.Va.
S of H—4 Elec. loco.; track gauge 36 in.
S of M—Hand.
PP—2 Return tubular boilers, total 300 H. P. 1 Gen. unit 500 volts, D. C. Sales agent, A. Mishler, New York, N. Y.

BLUE CREEK COAL & LAND CO.
General Office, Charleston, W. Va.
Blue Creek Nos. 1, 2, 3, 4 and 5 mines. Drift; Incline, 4½ to 6 ft. thick.
PO—Blakely, W. Va.. SP—Same. CTY—Kanawha. RR—K. & W. V.
PR—E. S. Jones, Scranton, Pa.
TR—T. E. Jones, Scranton, Pa.
GM—R. H. England, Charleston, W. Va.
PA—R. H. England...Charleston, W.Va.
CE—G. S. Plumley, " "
EM—Walter G. Crichton, " "
MS—Wm. Crichton.....Blakeley, W.Va.
MM—Irwin Hill, Blakely, W. Va.
SCO—Forest Store Co. Buyer, W. L. Carr, Blakely, W. Va.
S of H—Mules and 3 Electric locomotives. Track gauge 42 in.
S of M—Hand and 9 Electric machines.
PP—2 Return Tubular boilers, total, 300 H. P., 1 generating unit, 250 volts D. C., 1 pump.
EMP—300. Last fiscal year output, 200,000 tons. Sales agent, R. H. England, Charleston, W. Va.

BLUE JAY LUMBER CO.
General Office, Blue Jay, W. Va.
Blue Jay No. 4 Drift, Beckley Seam, 4 to 5 ft. thick.
PO—Glen Morgan, W. Va. SP—McQuade, W. Va. CTY—Raleigh. RR—C. & O., Piney Branch.
PR—C. L. Goodwin, Greensburg, Pa.
TR—P. C. Lynch, Blue Jay, W. Va.
GM—P. C. Lynch, Blue Jay, W. Va.
MS—B. B. Gilkinson, Glen Morgan, W.Va.
SM—J. A. Okes ....Blue Jay, W. Va.
S of H—Mules. Track gauge, 42 in.
S of M—Hand. Last fiscal year output, 8,638 tons. Sales Agents, W. Va. Coal Co., Richmond, Va.

BLUE RIDGE COAL CO.
Now Antler Coal Co.

BLUME, G M, ESTATE.
Fayette Mine. Drift, Sewell Seam, 3½ ft. thick.
PO—Fayette, W. Va. SP—Same. CTY—Fayette. RR—C. & O.
GM—E. G. Blume, Fayette, W. Va.
PA—E. G. Blume, " " "
MS—L. D. Rhodes, " " "
SM—John Reese, " " "
S of H—2 Elec. loco. Track gauge 30 in.
S of M—Pick and 2 elec. machines.
PP—2 Water tube boilers, 1 Gen. unit 250 volts D. C.
EMP—40. Last fiscal year output, 24,000 tons.

BLUME COAL & COKE CO.
Blume Mine, Drift, Sewell Seam, 3 to 4 ft. thick.
PO—Lookout, W. Va. SP—Same. CTY—Fayette. RR—C. & O., Keeney's Creek Branch.
PR—D. W. Boone.....Lookout, W.Va.
GM—D. W. Boone, " " "
PA—D. W. Boone, " " "
MS—S. J. Bays, " "
EE—A. H. Suttle " " "
SM—G. D. Walker, " " "
EM—Clark & Krebs..Charleston, W. Va.
S of H—2 Elec. loco. Track gauge, 42 in.
S of M—6 Elec. mach.
PP—Boilers, 200 H.P., 500 volts D.C.
EMP—125. Last fiscal year output 75,000 tons.
Sales Agency, C. & O. Coal Agency Co.

BOAT RUN COAL CO.
General Office, Grafton, W. Va.
Boat Run Mine; Drift; Seam 66 in. thick.
PO—Arden, W. Va.; SP—Same; CTY—Barbour; RR—B. & O.
PR—L. B. Brydon.....Grafton, W.Va.
TR—Richard Gerstell, " "
GM—Richard Gerstell, " "
GS—Ira Hoffman.....Arden, W.Va.
PA—Gail Goodwin.....Grafton, W.Va.
S of H—1 Elec. loco.
PP—2 Water Tube Boilers, 1 gen. unit; 1 Air Comp.

BOOMER COAL & COKE CO.
General Office, Cleveland, Ohio.
North Nos. 1 and 2 South Nos. 2, 3, 4, 5 and 6 Mines. Drift; "Eagle & Gas" Seam; 5½ ft. thick.
PO—Boomer, W. Va.; SP—Same; CTY—Fayette. RR—Kanawha & Mich.
PR—D. R. Hanna.....Cleveland, O.
TR—M. A. Hanna, " "
GM—Michael Gallagher, " "
PA—T. F. Cadden, "
GS—T. H. Huddy.....Boomer W.Va.
SCO—Boomer Supply Co., Buyer, Jesse Craver, Boomer, W.Va.
S of H—Mules and 9 Elec. loco., track gauge 42 in.
S of M—27 elec. mach.
PP—6 Boilers, total 800 H. P.
EMP—1200. Last fiscal year output 80,000 tons.
Sales Agent, M. A. Hanna & Co., Cleveland, O.

BOONE COUNTY COAL CORP.
General Office, Bullitt Bldg., Philadelphia, Pa.
Seam, 54 to 96 in. thick.
PO—Clothier, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Coal River Branch.
PR—Wm. J. Clothier, Philadelphia, Pa.
TR—Wm. Dignan, Jr., " "
GM—A. R. Montgomery, Clothier, W. Va.
PP—7 Water Tube Boilers; total, 2,050 H.P., 3 Gen. Units, 2,300 Volts, A. C., 3 Phase, 60 Cycles.
Note—Do not operate mines, but lease lands to operators.

BOOTH-BOWEN COAL & COKE CO.
Booth-Bowen Mine; Drift, Poca. Smokeless No. 3 Seam; 60 to 96 in. thick.
PO—Freeman, W. Va.; SP—Coon, W. Va.; CTY—Mercer; RR—N. & W., Simmons Br.
PR—Harry Rowen.....Freeman, W.Va.
TR—Harry Bowen. " "
GM—Harry Bowen, " "
GS—J. H. Bowen, " "
MM—J. H. Bowen, " "
EE—J. H. Bowen, " "
PA—J. A. Morgan, " "
EM—D. C. Jones. " "
MS—B. H. English, " "
S of H—2 Elec. loco. and mules.
S of M—2 Elec. mach.
PP—4 Boilers, total 480 H. P.; Power purchased.
EMP—250-300. Coke ovens 177 Bee Hive.
Last fiscal year ouput 183,550 tons.

BORGMAN COAL CO.
Borgman Mine, Drift, Freeport Seam.
PO—Tunnelton, W. Va. SP—Borgman, W. Va. CTY—Preston. RR—W. V. N.
GM—F. W. Borgman. Tunnelton, W.Va
PA—F. W. Borgman, " "
MS—F. W. Borgman, " "
SM—Borgman Supply Co. Buyer, F. W. Borgman, Tunnelton, W. Va.
S of H—Mules and rope.
S of M—Hand.
PP—Boiler, 80 H. P.
EMP—50.

BORDERLAND COAL CO.
See Kentucky data.

BOTTOM CREEK COAL & COKE CO.
Bottom Creek No. 1 and No. 2, Drifts. Pocahontas No. 3 Seam, 62 to 72 in. thick.
PO—Vivian, W. Va. SP—East Vivian, W. Va. CTY—McDowell. RR—N. & W.
PR—W. H. Lewis, ... Pottsville, Pa.
TR—G. S. Patterson, Vivian, W. Va.
GM—S. W. Patterson, " " "
GS—G. S. Patterson, " " "
PA—G. S. Patterson, " " "
MS—John Maurice " " "
EM—John F. Maurice, " "
MM—W. E. Daniel, " " "
EE—W. T. Jones, " " "
SM—Harry McFaddon, " "
S of H—Mules and 5 elec. loco. track gauge 44 inches.
S of M—Hand and 7 elec. machines.
PP—3 Erie return tubular boilers, total 450 H. P. 2 Gen. units, 250 volts D. C.
EMP—350. Last fiscal year output, 181,005 tons. Coke ovens, 220 Bee Hive. Sales Agents, Castner, Curran & Bullitt, Philadelphia, Pa.

BOWER COAL CO.
Drift Mine, Sewell Seam, 48 to 50 in. thick.
PO—Mabscott, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O.
PR—John Bower.....Mabscott, W.Va.
TR—M. S. Bower, " "
GM—M. S. Bower, " "
CE—P. C. Thomas, " "
MS—H. S. Walker, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
PP—1 Pump.
EMP—8. Last fiscal year output 4,000 tons.

BRADY COAL CO.
Klondike Mine; L. Kittanning Seam, 72 to 94 in. thick.
PO—Mabie, W. Va.; SP—Brady Siding, W. Va.; CTY—Randolph; RR—C. & O., Mabie Br.
PR—A. S. Brady.....Piedmont, W.Va.
CE—A. S. Brady, " "
TR—A. P. Brady.....Fairmont, W.Va.
GM—R. W. Wilmoth.....Elkins, W.Va.
PA—R. W. Wilmoth, " "
MS—R. W. Wilmoth, " "
SCO—Brady Store.....Mabie, W.Va.
S of H—Gasoline loco. and mules; track gauge 36 in.
S of M—Hand.
PP—1 Pump.
EMP—35.

BRANCH COAL & COKE CO.
Elverton Mine, Drift, Sewell Seam.
PO—Elverton, W. Va. SP—Same. CTY—Fayette. RR—C. & O.
GM—W. R. J. Zimmerman, Elverton, W. Va.
PA—W. R. J. Zimmerman, Elverton, W. Va.
EM—S. H. Bridge. Quinnimont, W.Va.
MS—W. D. Crickmer..Elverton, W.Va.
SM—W. B. Payne, " "
S of H—Elec. loco.
S of M—Hand and elec. mach.
PP—3 boilers, 450 H. P., gen. units, 250 volts D. C.
EMP—75.
Coke ovens—50.

BRANCHLAND COAL CO
PR—Jas. R. Branch, Branchfield, W. Va.
TR—E. F. Hubball, Branchfield, W. Va.
GM—Jas. R. Branch, Branchfield, W. Va.
PA—Jas. R. Branch, Branchfield, W. Va.
SM—Cannon Fleming, Branchfield, W. Va.

Branchfield Mine, Drift, Stockton Belmont Seam, 7 to 8 ft. thick.
PO—Branchfield, W. Va. SP—Branchland, W. Va. CTY—Lincoln. RR—C. & O.
S of H—Mules. Track gauge 44 in.
S of M—8 Compressed air machines.
PP—1 boiler, 150 H. P. 1 Gen. unit. 1 air compressor.
EMP—75. Last fiscal year output 50,000 tons.

Guyan River Mine, Drift, No. 5 Block Seam, 4 ft. thick.
PO—Branchfield, W. Va. SP—Branchland, W. Va. CTY—Lincoln. RR—C. & O.
S of H—Mules. Track gauge 44 in.
S of M—2 compressed air machines.
PP—Power furnished by Branchland Coal Co.
EMP—30. Last fiscal year output, 30,000 tons.

BRAXTON COLLIERIES CO.
Braxon-Brackett Mine.
PO—Bower, W. Va.; CTY—Braxton.
No report.

BROOKE COUNTY COAL CO.
See Clifton Coal Co.

BROWN COAL CO.
Brown Mine; Drift; Sewell Seam, 42 to 56 in. thick.
PO—Nuttallburg, W. Va. SP—South Nuttall, W. Va. CTY—Fayette. RR—C. & O.
GM—J. A. Boone. Nuttallburg, W.Va.
PA—J. A. Boone, " "
SM—Eli J. Taylor, " "
MS—John Fraser..Nuttallburg, W.Va.
EM—P. Konrad. Kanawha Falls, W.Va.
S of H—Mules and 2 Elec. loco.; track gauge 44 in.
S of M—Hand and elec. mach.
PP—2 boilers, total 300 H. P., gen. units, 550 volts D. C.
EMP—150. Last fiscal year output 65,000 tons.

BRYDON, L. B. & CO.
PO—Grafton, W. Va
Successors to Sunnyside Coal Co.
No report.

BUCHANAN COAL CO.
Drift Mine, War Creek Seam.
PO—Yukon, W. Va. SP—Susanna, W. Va. CTY—McDowell. RR—N. & W.
GM—J. L. Charles....Yukon, W.Va.
PA—J. L. Charles, " "
MS—M. A. Hurley, " "
SM—J. L. Charles, " "
EM—W. S. Cope...Crumpler, W. Va.
S of H—Mules and gaso. motor.
S of M—Hand.
PP—1 boiler, 150 H. P.

BUCKHANNON RIVER COAL CO.
Florence Mine, Drift, Masontown or upper Freeport Seam, 5½ to 6½ ft. thick.
PO—Adrian, W. Va. SP—Same. CTY—Upshur. RR—C. & C.
PR—T. S. Lackey.....Uniontown, Pa.
TR—M. D. Brooks, " "
GS—R. J. Humphreys.....Adrian, W.Va.
PA—R. J. Humphries, " " "
EM—A. Alstetter.....Clarksburg, W.Va.
SCO—Adrain Supply Co. Buyer, R. J. Humphries, Adrian, W. Va.
SM—H. O. Talbert, French Creek, W. Va.
S of H—2 Elec. Loco., track gauge 42 in.
S of M—2 Elec. machines
PP—2 Tubular boilers, total 300 H. P, 250 volts, D. C.
EMP—80. 36 Bee Hive coke ovens. Sales agents, National Fuel Co., Uniontown, Pa.

BUCKEYE COAL & COKE CO.
Buckeye Mine; Drift, Poca No. 3 Seam.
PO—Freeman, W. Va.; SP—Coon and Orkney, W. Va.; RR—N. & W.
PR—W. C. Stephens....Roanoke, Va.
TR—W. C. Stephens, " "
GM—J. C. Pack.....Freeman, W.Va.
PA—J. C. Pack, " "
EM—D. C. Jones.....Bramwell, W.Va.
GS—F. R. Hewitt, " "
MS—H. C. Price, " "
SCO—Address the Company, Freeman, W.Va.
S of H—5 Steam loco. and mules track gauge 44 in.
S of M—Hand.
PP—3 Return tubular boilers, 250 H. P.
EMP—200. Last fiscal year output 130,818 tons.
Sales Agency, Castner, Curran & Bullitt, Inc.

BUFFALO COLLIERIES COMPANY.
Buffalo Mine, Dift, Winefrede Seam, 4 to 6 ft. thick. Operate washery.
PO—Chattaroy, W. Va. SP—Same. CTY—Mingo. RR—Norfolk & Western Ry.
PR—C. E. Wilsen, Crewe, Va.
TR—T. C. Perger, Chattaroy, W. Va.
GM—S. V. Preston, " " "
MS—D. S. Holmes. " " "
SM—R. L. Anderson, " " "
EM—N. H. Mannakee, " " "
EE—H. M. Williamson, " " "
S of H—Mules and 6 Electric Locomotives. Track gauge 48 in.
S of M—3 Compressed air and 6 elec. mach.
PP—3 Return Tub. boilers total H. P. 425. 2 generating units, 250 volts, D. C. 1 air comp, 6 pumps.
EMP—200. Last fiscal year output 140,000 tons.

BUFFALO EAGLE COLLIERY CO.
Nos. 1 and 2 Mines; Drifts; Eagle and Island Creek Seam, 60 to 84 in. thick.
PO—Accoville, W. Va.; CTY—Logan; RR—C. & O., Guyandotte Valley Branch.
PR—P. J. Riley, ...Accoville, W.Va.
GM—P. J. Riley, " "
MS—P. J. Riley, " "
TR—J. H. Ford, " "
PA—J. H. Ford.....Accoville, W.Va.
EM—C. S. Borden. Charleston, W.Va.
EE—Geo. R. Wood. Philadelphia, Pa.
S of H—2 Elec. loco.; track gauge 44 in.
S of M—2 Elec. mach. and hand.
PP—Power purchased
EMP—60. Output 750 tons per day.
Sales Agent, Logan-Pocahontas Fuel Co. Charleston, W. Va.

BURNWELL COAL & COKE CO.
See Kentucky data.

BUTTERMORE, J. J., COAL CO.
General Office, Connellsville, Pa.
Elizabeth Mine, Drift, Pittsburgh Seam 7 to 9 ft. thick.
PO—Montana, W. Va.; SP—Same, CTY—Marion; RR—B. & O., F. M. & P. Branch.
PR—J. J. Buttermore..Connellsville, Pa.
GM—J. J. Buttermore, " "
TR—Geo. S. Connell, " "
PA—Geo. S. Connell, " "
MS—G. T. Rodeheaver, Catawba, W. Va.
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—20.

BURROWS COAL CO.
Polar Mine.
PO—Clarksburg, W. Va.; CTY—Lewis.
No report.

BYRON COAL CO.
General Office, Clarksburg, W. Va.
Althea Mine; Drift; Pittsburgh No. 8 Seam, 8 ft. thick.
PO—Mt. Clare, W. Va. SP—Byron, W. Va. SP—Byron, W. Va. CTY—Harrison. RR—B. & O.
PR—M. P. Gannon, Westernport, Md.
TR—H. J. Glick, Cumberland, Md.
GM—M. P. Gannon, Westernport, Md.
GS—P. P. Gannon, Mt. Clare, W. Va.
PA—P. P. Gannon, Mt. Clare, W. Va.
CE—Carl Horner, Clarksburg, W. Va.
EM—Carl Horner, Clarksburg, W. Va.
S of H—Mules, track gauge 42 in.
S of M—2 Elec. Mach.
PP—Power purchased.
EMP—82. Last fiscal year output, 95,000 tons. Sales agent, D. Howard, Clarksburg, W. Va.

CABIN CREEK CONSOLIDATED COAL CO.
General Office, Kayford, W. Va. 22 Mines in W. Va.
PR—W. M. Puckett, Charleston, W. Va.
GM—Josiah Keely, Kayford, W. Va.
PA—Josiah Keely, " "
EM—J. S. Jenkins, " "
MM—C. E. Harmon, " "
EE—C. E. Harmon, " "
SCO—Buyer, A. T. Baker, Kayford, W. Va.
Sales Agent, A. J. Baker, Kayford, W.Va.

Kayford Nos. 1 and 2, Drifts. No. 1 Gas Coal, 4ft. 11 in. to 7 ft. thick.
PO—Kayford, W. Va. SP—Same. CTY—Kanawha. RR—C. & O. Cabin Creek Branch.
MS—H. L. Fisher, Kayford, W. Va.
SM—T. H. Brooks, Kayford, W. Va.
S of H—Mules and 2 elec. loco. track gauge 44 inches.
S of M—Pick and 3 elec. machines.
PP—3 Union and 1 Erie City return tubular boilers, total 600 H. P. 3 Gen units, 250 volts D. C., 2 pumps.
EMP—100. Last fiscal year output 119,399 tons.

Raccoon No. 1, Drift, No. 2 Gas seam, 3 ft 10 in. to 5 ft. 10 in. thick.
PO—Kayford, W. Va. SP—Same. CTY—Kanawha. RR—C. & O. Cabin Creek Branch.
MS—H. L. Fisher ....Kayford, W.Va.
SM—T. H. Brooks, " "
S of H—Mules and 1 elec. loco. Track gauge 44 in.
S of M—Pick and 6 elec. machines.
PP—5 Pumps. Power from Kayford mine.
EMP—130. Last fiscal year output 83,336 tons.

Raccoon No. 2 East and Raccoon No. 2 West, Drifts, Coalburg Seam, 5½ to 7½ ft. thick.
PO—Kayford, W. Va. SP—Same. CTY—Kanawha. RR — C. & O. Cabin Creek Br.
MS—H. L. Fisher ....Kayford, W.Va.
SM—T. H. Brooks, " "
S of H—Gravity, mules and 3 elec. loco. Track gauge 44 in.
S of M—8 Elec. machines.
PP—Power furnished from Kayford mines.
EMP—60. Last fiscal year output 156,521 tons.

Thistle and Shamrock Mines, Drifts, No. 2 Gas Seam, 4 ft. 11 in. to 6 ft. thick.
PO—Kayford, W. Va., SP—Same. CTY—Kanawha RR—C. & O. Cabin Creek. Br.
MS—H. L. Fisher ....Kayford, W.Va.
SM—T. H. Brooks, " "
S of H—Mules and 3 elec. loco. Track gauge 44 in.
S of M—Hand and 10 Elec. mach.
PP—Power furnished from Kayford mines.

Continued on Next Page.

EMP—150. Last fiscal year output 189,919 tons.

Rose Mine, Drift, Coalburg Seam, 5½ to 6 ft. 9 in thick.
PO—Kayford, W. Va. SP—Same, CTY—Kanawha. RR—C. & O. Cabin Creek Br.
MS—H. L. Fisher . ...ayford, W.Va.
SM—T. H. Brooks, " "
S of H—Gravity, mules, and 1 elec. loco. Track gauge 44 in.
S of M—Hand and 6 Elec. mach.
PP—Power furnished from Kayford Mines.
EMP—55. Last fiscal year output 74,-188 tons.

Acme Mine, Drift, Coalburg Seam, 4 ft. 7 in. to 5 ft. 7 in. thick.
PO—Acme, W. Va. SP—Same. CTY—Kanawha. RR—C. & O., Cabin Creek Branch.
MS—W. A. Otey.....Acme, W.Va.
SM—C. E. Campbell, " "
S of H—Gravity, mules and 1 elec. loco. Track gauge 44 incnes.
S of M—Pick, and 2 elec. machines.
PP—2 Jeffrey and 2 Charleston return tubular boilers, total 500 H. P. 3 Gen. units, 250 volts, D. C.
EMP—35. Last fiscal year output, 31,-541 tons.

Keystone, Empire, Buckeye and Black Tulip Mines, Drifts No. 2 Gas Seam, Keystone, 4 to 5½ ft. thick. Empire, 3 ft 8 in. to 5 ft. 8 in. thick. Buckeye, 4 ft. 2 in to 5 ft. 8 in. thick. Black Tulip, 4 ft. 2 in. to 5 ft. 9 in. thick.
PO—Acme, W. Va. SP—Same. CTY—Kanawha. RR—C. & O.
MS—W. A. Otey.....Acme, W.Va.
SM—C. E. Campbell, " "
S of H—Gravity, Mules and 5 elec. loco. Track gauge 42 inches.
S of M—Pick and 16 elec machines.
PP—Power furnished from Acme Mine. 1 Pump.
EMP—Keystone 25; Empire 45; Buckeye 50; Black Tulip 60. Last fiscal year output, Keystone 17,390 tons; Empire 47,986 tons; Buckeye 69,471 tons; Black Tulip 87,022 tons.

Red Warrior Mine; Drift, No. 2 Gas Seam, 42 to 72 in. thick.
PO—Warrior, W. Va.; SP—Red Warrior, W. Va.; CTY—Kanawha; RR—C. & O., Cabin Creek Br.
MS—W. H. Morris....Leewood, W. Va.
SM—M. T. Long.....Warrior, W. Va.
S of H—1 Elec. loco. and mules; track gauge 48 in.
S of M—3 Elec. mach.
PP—Power purchased.
EMP—25. Last fiscal year output 17,771 tons.

Caledonia Mine; Drift, No. 2 Gas Seam, 39 to 53 in. thick.
PO—Warrior, W. Va.; SP—Red Warrior, W. Va.; CTY—Kanawha; RR—C. & O., Cabin Creek Br.
MS—W. H. Morris....Leewood, W. Va.
SM—M. T. Long.....Warrior, W. Va.
S of H—Mules; track gauge 44 in.
S of M—3 Elec. mach. and hand.
PP—Power purchased.
EMP—25. Last fiscal year output 15,685 tons.

Cherokee Mine, Drift, No. 2 Gas Seam, 4 ft. 5 in. to 5 ft. 3 in. thick.
PO—Leewood, W. Va.; SP—Cherokee, W. Va.; CTY—Kanawha; RR—C. & O., Cabin Creek Br.
MS—W. H. Morris.....Leewood, W.Va.
SM—H. W. Wilson, " "
S of H—Gravity, mules and elec. loco., track gauge, 44 in.
S of M—Pick and 6 elec. mach
PP—Purchase power.
EMP—60. Last fiscal year output 72,706 tons.

Davis Mine, Drift, Lwiston Seam, 4 ft. 5 in. to 6 ft. thick.
PO—Ohley, W. Va., SP—Same, CTY—Kanawha. RR—C. & O., Cabin Creek Branch.
MS—D. W. Parker....Ohley, W.Va.
SM—K. A. Atkinson, " "
S of H—Gravity, mules and 1 elec. loco., track gauge 44 in.
S of M—Pick, and 4 elec. mach.
PP—Purchase power, 11 pumps.
EMP—60. Last fiscal year output 57,-284 tons.

Holly Mine, Drift, No. 2 Gas Seam, 4 ft. 5 in. to 5 ft. 3 in. thick.
PO—Leewood, W. Va.; SP—Holly, W. Va.; CTY—Kanawha; RR—C. & O., Cabin Creek Br.
MS—W. H. Morris.....Leewood, W.Va.
SM—E. H. Dorsey, " "
S of H—Gravity, mules and air hoist Track gauge 44 in
S of M—Pick and 5 compressed air machines.
PP—3 Erie return tubular boilers, total 400 H. P., 2 air comp.
EMP—35. Last fiscal year output 38,-081 tons.

Quarrier Mine; Drift, No. 2 Gas Seam, 55 to 74 in. thick.
PO—Wake Forest, W. Va.; SP—Quarrier, W. Va.; CTY—Kanawha; RR—C. & O., Cabin Creek Br.
MS—W. H. Morris....Leewood, W. Va.
SM—George E. Downer, Wake Forest, W.Va.
S of H—Mules and air hoist; track gauge 44 in.
S of M—5 Comp. air mach. and hand.
PP—Contemplating purchase power.
EMP—50. Last fiscal year output 66,439 tons.

Bellclare and Ruby Mines, Drifts, Bellclare No. 2 Gas Seam 4 ft. 1 in. to 5 ft. 9 in. thick. Ruby Mine, Coalburg Seam, 4 ft. 8 in. to 5 ft. 1 in. thick.
PO—Decota, W. Va., SP—Same, CTY—Kanawha. RR—C. & O., Cabin Creek Branch.
MS—H. H. Davis,....Decota, W. Va.
SM—S. F. McConihay, " "
S of H—Gravity, mules and 3 elec. loco. track gauge 44 in.
S of M—Pick and 6 elec. machines.
PP—Power purchased.
EMP—Bellclare 60; Ruby 55. Last fiscal year output Bellclare 66,169 tons; Ruby 65,261 tons.

United No. 1 and No. 2 Mines, Drifts, United No. 1, No. 2 Gas Seam, 4 ft. 10 in. to 5 ft. 3 in. thick. United No. 2, Coalburg Seam, 4½ to 6½ ft. thick.
PO—Wevaco, W. Va.; SP—United, W. Va.; CTY—Kanawha; RR—C. & O., Cabin Creek Br.
MS—Jas. E. Staton.....Wevoca, W.Va.
SM—E. S. Baker " "
S of H—Gravity, mules, and 3 elec. loco., track gauge 44 in.
S of M—Pick, and 5 elec. mach.
PP—Power purchased.
EMP—United No. 1, 80; United No. 2, 65. Last fiscal year output No. 1, 107,662 tons; United No. 2, 76,-722 tons.

CALIF COAL CO.
Calif Mine, Drift, Redstone & Pgh. Seam 5½ to 6 ft. thick.
PO—Lost Creek, W.Va.; SP— Same, CTY—Harrison. RR—B.&O.
PR—A.C.Leisenring, Lost Creek,W.Va.
GM—A. C. Leisenring, " "
TR—Henry Gordon, " "
MS—J. G. Bulmer, " "
CE—D. D. Britt..Clarksburg, W.Va.
SCO—Calif Store, Buyer, John T. Michael, Lost Creek, W. Va.
S of H—1 Gasoline loco. and mules.
S of M—Hand and machines.
EMP—60. Last fiscal year output 64,-505 tons.

CALVERT COAL & COKE CO.
Succeeded by Templeton Coal Mining Co.

CAMPBELL'S CREEK COAL CO.
General Office, Cincinnati, O.
Nos. 1 and 3 Mines; Drift; No. 5 Seam, 5 to 6½ ft. thick. operate washeries.
PO—Putney, W. Va.; SP—Dana, W. Va.; CTY—Kanawha. RR—K. & M., Campbell's Creek R.R.Co.
PR—S. F. Dana.....Cincinnati, O.
TR—E. O. Dana, " "
GM—R. P. Gillham, " "
MGR of Mines, W.V.Rensford Dana, W.Va.
MM—W. H. Canterbury, " "
EM—M.W.Venable, Charleston, W.Va.
MS—Andrew Calderwood, Putney,W.Va.
SM—A. M. Putney, "
Sof H—10 Elec. loco.; track gauge 44 and 56¼ in.
S of M—16 Elec. mach.
PP—Power purchased.
EMP—397. Last fiscal year output 340,200 tons.
Sales agent, Campbells Creek Coal Co., Cincinnati, O.

CANNELTON COAL & COKE CO.
General Office, Cannelton, W. Va.
PR—W. C. Franz, Sault Ste. Marie, Ont.
TR—A. A. Chitty, " " " "
GM—W.C.Franz, " " " "
GS—F. O. Harris, Cannelton, W. Va.
PA—F. O. Harris, " "
CE—E. B. Farrand, " "
FE—P. S. Nunnally, " "
MS—Henry Deem, " "
SM—T. M. Scott, " "
Sales Agents, E. A. Cole & Co., Columbus, Ohio.

Cannelton No. 1, Drift, No. 2, Kanawha Gas Seam, 5½ to 7 ft. thick.
PO—Cannelton, W. Va., SP—North Cannelton, W.Va., CTY—Fayette. RR—K. M. Smithers Creek Br.
S of H—Mules, hand, 4 elec. loco., gauge 39 in.
S of M—Hand, and 9 elec. machines.
PP—5 Return tubular boilers, total 750 H.P., 2 gen. units, 250 volts, 400 K. W., 3 pumps.
EMP—450. 90 Bee Hive coke ovens, (not in use) Last fiscal year output 270,870 tons.

Cannelton No. 2, Drift, No. 2 Kanawha Gas Seam, 5½ to 7½ ft. thick.
PO—Cannelton, W. Va., SP—North Cannelton, W.Va., CTY—Fayette. RR—K.&M., Smithers Creek Br.
S of H—Mules and 6 elec. loco. track gauge 39 in.
S of M—Hand and 8 elec. machines.
PP—2 Pumps. Power furnished by Virginia Power Co.
EMP—450. Last fiscal year output 229,633 tons.

Cannelton No. 3, Drift, No. 1 Gas, "Eagle Seam" 3½ to 5 ft. thick.
PO—Cannelton, W. Va., SP—North Cannelton, W.Va., CTY—Fayette. RR—K.&M., Smithers Creek Br.
S of H—2 Elec. loco., track gauge 39 in.
S of M—2 Elec. machines.
PP—1 Pump. Power furnished from No. 1 Mine Power House.
EMP—18. Last fiscal year output 13,118 tons.

Cannelton No. 4, Drift, No. 2 Kanawha Gas Seam, 4 to 6 ft. thick.
PO—Cannelton, W. Va., SP—North Cannelton, W.Va., CTY—Fayette. RR—K.&M., Smithers Creek Br.
S of H—3 Elec. loco., track gauge 39 in.
Sof M—4 Elec. machines.
PP—1 Pump. Power furnished by Virginian Power Co.
EMP—34. Last fiscal year output 46,560 tons.

CARBON COAL CO.
South, North, Low Sulphur and Spunt Mines. Drift; No. 2 Gas and Coalburg Seams; 5 ft. 4 in. to 7 ft. 2 in. thick.
PO—Carbon, W.Va.; SP—South Carbon, W.Va.; CTY—Kannawha; RR—C.&O., Cabin Creek Br.
PR—J. R. Thomas, Charleston, W.Va.
TR—C. A. Cabell,....Carbon, W.Va.
GM—C. A. Cabell, " "
Auditor—E. C. Hanna....Carbon, W.Va.
GS—W. E. James, " "
PA—E. B. Pearce, " "
EM—K. M. Quinckle, " "
MM—K. M. Quinckle, " "
EE—J. C. Harris.....Carbon, W.Va.
MS—R. B. Payne, " "
SM—G. K. Cabell, Wevaco, W.Va., and S. F. Collins, Carbon, W. Va.
S of H—10 Elec. loco., track gauge 42 in.
S of M—16 Elec. mach.
PP—Power purchased.
EMP—318. Last fiscal year output 309,800 tons.
Sales Agency, Carbon Fuel Co., Cincinnati, O.

CARROLL—CROSS COAL CO.
General Office, Bloomington, Md.
Black Diamond and Imperial Mines: Drift; Freeport Seam, 5 ft. to 5 ft. 8 in. thick.
PO—Emoryville, W. Va.; SP—Same; —CTY—Mineral. RR—W. M., Elk Garden Br.
PR—Carrol Pattison, Bloomington, Md.
TR—Carroll Pattison, " "
PA—Carroll Pattison, " "
GM—Howard Cross, Emoryville, W.VA.
MS—Howard Cross, " "
PA—Howard Cross, " "
SM—C. O. Enos, Emoryville, W.Va.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—70. Last fiscal year output 46,859.09 tons.

CARTER COAL CO.
General Office, Johnson City, Tenn.
4 Mines in West Virginia, 4 mines in Ky.
PR—Geo. L. Carter....Coalwood, W.Va.
TR—T. F. Davis, " " "
Asst TR—C. A. Hall, " "
VP—J. C. Stone, " " "
PA—S. C. Minnick, " "
EM—W. R. Raney, ... Warren, Ky.
MM—C. C. Broyles, " "
FE—C. C. Broyles, " "
SCO—Carter Coal Co. Buyer, S. S. McCormick, Johnson City, Tenn.

Caretta Mine, Drift, War Creek Seam, 4 to 5½ ft. thick.
PO—Yukon, W.Va., SP—Susanna, W. Va., CTY—McDowell. RR—N. & W. Dry Fork Branch.
MS—F. A. Garth.....Coalwood, W.Va.
SM—Jas. L. Martin, Yukon, W. Va.
S of H—8 Elec. loco., track gauge 48 inches.
S of M—Elec. machines.
PP—Power purchased, 2 pumps.

Thelma Mine, Drift, Sewell Seam, 3½ to 5½ ft. thick.
PO—Coalwood, W. Va., SP—Same, CTY—McDowell. RR—N. & W., Clear Fork Branch.
MS—F. A. Garth.....Coalwood, W.Va.
SM—J. V. Bowman, " "
S of H—7 Elec loco., track gauge 48 in.
S of M—Elec. machines.
PP—Power purchased. 2 pumps.

Nora, Coalwood 2 and 3, Drifts, Lambert of Welch Seam, 3½ to 6 ft. thick.
PO—Coalwood, W. Va., SP—Same, CTY—McDowell. RR—N. & W., Clear Fork Branch.
MS—F. A. Garth.....Coalwood, W.Va.
SM—S. C. Minnich, " "
S of H—Elec., track gauge 48 in.
S of M—Elec. machines.
PP—Power purchased.

CARTER-SPENCER COAL CO.
South Hill Mine.
PO—Lewiston, W. Va.; CTY—Kanawha.
No report.

CATAWBA COAL CO.
General Office, Connellsville, Pa.
Catawba Mine, Drift, Pittsburgh Seam, 9 ft. thick.
PO—Catawba, W. Va. SP—Same. CTY—Marion. RR—B.&O., F. M. & P. Branch.
PR—Jno. J. Buttermore, Connellsville,Pa
TR—J. M. Herpick, " "
PA—J. M. Herpick, " "
GM—John J. Buttemore, " "
GS—U. G. Swissher, Catawba, W. Va.
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—18. Last fiscal year output 15,448.

CENTRAL FAIRMONT COAL CO.
Snake Hill Mine, Drift, Pittsburgh No. 8 Seam, 9 ft. thick.
PO—Clarksburg, W. Va., SP—Same, CTY—Harrison. RR—B.&O.
PR—F. E. Guthern.....Marion, O.
TR—D. Howard....Clarksburg, W.Va.
GM—D. Howard, " "
PA—D. Howard, " "
MS—Frederick Howard, " "
EM—Horner Bros., " "
S of H—Mules; track gauge 42 in.
S of M—2 Elec mach.
PP—Power purchased.
EMP—78. Last fiscal year output 65,-000 tons.
Sales Agent, D. Howard, Clarksburg, W. Va.

CENTRAL POCAHONTAS COAL CO.
General Office, Welch, W. Va.
Anawalt Mine.
PO—Anawalt, W. Va.; CTY—McDowell.
PR—R. V. Shanklin.....Gary, W.Va.
TR—J. H. Barker, " "
EM—L. A. Osborne, " "
GM—C. M. Gates.....Welch, W.Va.
PA—G. W. Kanode, " "
Asst MS—H. O. Carper..Anawalt, W.Va.
SCO—Peery & Gibson.
Sales Agency, Wm. C. Atwater & Co., Bluefield, W. Va.

THE CENTRAL WEST POCA. COAL CO.
Now Evans Coal Co.

CENTURY COAL CO. OF WEST VIRGINIA
General Office, 10 South St., Baltimore, Md.
Century Nos. 1 and 2 Mines, Shaft and Drift, Red Stone Seam.
PO—Century, W. Va. SP—Same. CTY—Barbour. RR—B. & O.
GM—Benj. Bissell.....Baltimore, Md.
PA—Benj. Bissell. " "
MS—John Phillips....Century, W.Va.
EM—H. R. Bissell, " "
SM—L. E. Shull, " "
S of H—4 Elec. loco., and 1 Gasoloco.
S of M—Hand and 20 Elec. mach.
PP—4 boilers, total 600 H. P., 250 volts D. C.
EMP—500.

CHATTAROY COLLIERY CO.
See Howard Junior Coal Co.

CHEAT RIVER COAL CO.
Drift Mine, Freeport and Kittanning Seam, 5 to 7 ft. thick.
PO—Albright, W. Va.; SP—Same; CTY Preston; RR—M. & K., Ruthbelle Lumber Ry. Branch.
PR—A. R. Balcom, Albright, W. Va.
TR—J. C. Markley, ...Kenmore, O.

CHESAPEAKE MINING CO.
Chesapeake Nos. 1 and 2 Mines, Drift.
PO—Handley, W. Va. SP—Same. CTY—Kanawha. RR—C. & O.
GM—L. D. Burns.....Ronda, W.Va.
PA—A. W. Fitzwater, Handley, W.Va.
EM—E. G. Biddeson, " "
MS—J. E. Shafer, " "
SM—D. F. Martin, " "
EE—J. H. Bletcher, " "

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S of H—Elec. loco. and mules.
S of M—Elec. machines.
PP—3 boilers, 375 H. P., 2 gen. units, 250-275 volts D. C.
EMP—200.

CHRISTIAN COLLIERY CO.
Christian Mines Nos. 1 and 2, Drifts, Big Eagle and Powellton Seam, 4 to 6 ft. thick.
PO—Mahan, W.Va., SP—Same, CTY—Fayette. RR—C. & O., Paint Creek Branch.
PR—F. P. Christian, Lynchburg, Va.
TR—Giles H. Miller, " "
GM—Quin Morton,...Burnwell, W.Va.
PA—Quin Morton, " "
GS—F. H. Morton, " "
EM—R. B. Whittaker, Milburn, W.Va.
SM—C. C. Settle,....Mahan, W.Va.
S of H—6 elec. loco., track gauge 44 in.
S of M—7 elec. machines.
PP—2 return tubular boilers, total 300 H. P. 1 pump.
EMP—150. Last fiscal year output 120,000 tons.
Sales agent, Quin Morton, Burnwell, W. Va.

CIRRUS COAL & COKE CO.
General Office, Frostburg, Md.
Cirrus No. 2 Mine.
PO—Big Four, W. Va. CTY—McDowell.
Note—Mine shut down.

CITY COAL CO.
Combs Mine, Drift, Sewell Seam, 3 ft. to 3 ft. 5 in. thick.
PO—Beckley, W. Va., SP—Same, CTY—Raleigh. RR—Pine River & Paint Creek, Branch of C.& O.
GS—B.H.White, (Owner) Beckley, W.Va.
MS—J. T. Boalt, " "
MM—J. T. Boalt, " "
EM—Geo. Wilson, " "
SM—B. H. White, " "
S of H—Mules, 2 Steam loco.; track gauge 34 inches.
S of M—Hand.
PP—2 boilers, total 300 H. P., 4 pumps.
EMP—30. Sale Agents, West Va. Coal Co., Richmond, Va.

CLARKSBURG GAS COAL CO.
General Office, Uniontown, Pa.
McWhorter Mine; Drift, Red Stone and Peh. Seam; 84 in. thick.
PO—McWhorter, W Va., SP—Same; CTY—Harrison; RR—B. & O.
PR—Harry Whyel.....Uniontown, Pa.
TR—George Whyel, " "
PA—E. E. Ober, " "
CE—T. A. Douthitt, " "
MS—Harry Drum, McWhorter, W. Va.
SCO—Swickley Supply Co., Buyer J. H. Yoder, Uniontown, Pa.
S of H—1 Elec. loco.; track gauge 42 in.
S of M—2 Elec. mach.
PP—1 Water tube boilers, 125 H. P.
EMP—50. Coke ovens 20 Bee Hive. Last fiscal year output 50,000 tons.
Sales Agent, E. E. Ober, Uniontown, Pa.

CLARKSBURG COAL MINING CO.
General Office, Clarksburg, W. Va.
Florida Mine; Slope, Pgh. Seam, 84 in. thick.
PO—Reynoldsville, W. Va.; SP—Wolf Summit, W. Va.; CTY—Harrison; RR—B. & O., Main line.
PR—J. T. Morrison..Clarksburg, W. Va.
TR—J. O. Miller, " "
GM—Carl L. Hornor, " "
GS—Wayne B. Hornor, " "
PA—Wayne B. Hornor, " "
CE—Hornor Bros., " "
MM—Ward Randolph, " "
S of H—Gasoline and steam loco., mules and rope; track gauge 42 in.
S of M—9 Elec. mach.
PP—3 Boilers, 1 compressor, 2 pumps.
Successors to the East Coast Coal Mng. Co.

CLAYBROOK COAL MINING CO.
PO—Barren Creek, W. Va.
No report.

CLEAR FORK COAL CO.
Leevale Mine, Drift, Dorothy Seam, 4 to 8 ft. thick.
PO—Jarrolds Valley, W.Va., SP—Leevale, CTY—Raleigh. RR—C. & O., Cabin Creek Branch.
PR—John S.Weakland, Charleston,W.Va
TR—John S. Weakland, " "
EM—J. T. B. Eaton, " "
PA—D. F. Branham.....Jarrolds, W.Va.
GS—J. W. Branham, Jarrolds Valley, W. Va.
MM—John Roysdon, Jarrolds Valley, W. Va.
SCO—Clear Fork Coal Co. Buyer, H. W. Carper, Jarrolds Valley, W.Va.
S of H—3 Elec. loco., track gauge 42 in.
S of M—3 Elec. machines.
PP—1 return tubular boiler, 150 H. P., 1 gen. unit 250 volts D. C.
EMP 118 Last fiscal year output 93,000 tons.
Sales Agents, The Webb Fuel Co., Cincinnati, Ohio.

CLIFTON COAL CO.
General Office, 223 Fourth Ave., Pittsburgh, Pa.
Clifton Mine; Drift, Pgh. Thin Seam, 54 to 90 in. thick.
PO—Cliftonville, W. Va.; SP—Same; CTY—Brooke; RR—W. P. T.
PR—L. A. Burnett....Pittsburgh, Pa.
PA—L. A. Burnett, " "
CE—John M. Rayburn, " "
TR—R. M. Atkinson, " "
GS—Andrew G. Hunt, Cliftonville, W.Va.
MS—Dave Thomas, " "
MM—Frank Hunt, " "
EE—C. H. McMurray, " "
SCO—Cliftonville Supply Co., " "
S of H—4 Elec. loco. and mules; track gauge 44 in.
S of M—7 Elec. mach.
PP—2 Aultman & Taylor, water tub. boilers, total 300 H.P., 2 gen. units 100 K. W., 500 volts D. C., 2 engines.
EMP—350. Daily output 1,200 tons.
Sales Agent, L. A. Burnett, Pittsburgh, Pa.

COAL BELL COAL CO.
Trees and Benedum Mines; Drifts, Belmont Seam, 54 to 55 in. thick.
PO—Bentree, W.Va.; SP—Same; CTY—Clay; RR—C. & O., Gauley Branch.
PR—M. C. Benedum, Pittsburgh, Pa.
TR—Ralph E. Flinn, " "
GM—S. M. Dunbar, Bentree, W.Va.
PA—S. M. Dunbar, " "
GS—A. Archbald, " "
MS—L. O. Arthur, " "
CE—P. Konrad, Kanawha Falls "
MM—J. H. Belcher, ..Bentree, "
EE—J. H. Belcher, " "
S of H—3 Elec. loco., 2 storage batteries.
S of M—6 Elec. mach.
PP—2 Erie water tube boilers, total 300 H.P., 2 gen. units 250 volts D.C.
EMP—130. Output 50,000 tons.
Sales Agency, John T. Hesser, Cincinnati, O.

COAL RIVER COAL CO., (THE)
PR—Thomas Nichol, Glen Jean, W.Va.
TR—Thomas Nichol, " "
GM—J. M. Moore,...Ottawa, W.Va.
GS—J. M. Moore, " "
PA—J. M. Moore, " "
EM—W. A. Garrett, " "
EE—W. L. Keyser, " "
SM—G. C. Billips, " "

Mines Nos. 1 and 2, Drifts, Eagle and No. 2 Gas Seams, 42 to 72 in. thick.
PO—Ottawa, W. Va. SP—Same. CTY—Boone.
RR—Coal River Branch C. & O.
S of H—Mules, 2 elec. loco. 1 storage battery, track gauge 44 in.
S of M—6 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P. . gen. unit 250 volts D. C. 1 pump.
EMP—125. Last fiscal year output 90,000 tons.

Mine No. 3, Shaft, Eagle Seam, 5 ft. 10 in. thick.
PO—Ottawa, W. Va., SP—Same. CTY—Boone. RR—C.&O. Coal River Branch.
S of H—Mules and elec., track gauge 44 in.
S of M—1 Elec. machine.
PP—Buy power.

COAL RIVER COAL & COKE CO.
General Office, Huntington, W. Va.
Dobra Mine, Dift. No. 2 Gas Seam, 5½ ft. thick.
PO—Dobra, W. Va., SP—Clothier, W.Va., (final destination Dobra) CTY—Logan. RR—C.&O., Coal River Branch.
PR—Paul Hardy,..Huntington, W.Va.
TR—C. P. Donovan, " "
GM—Paul Hardy, " "
PA—W. T. Smythe, " "
MS—B. J. Hiner.....Dobra, W.Va.
MM—Ed. Eggers, " "
SCO—Coal River Coal & Coke Co., Buyer, B. J. Hiner, Dobra, W. Va.
S of H—5 Elec. loco.; track gauge 44 inches.
S of M—5 Elec. mach.
PP—1 Erie return tubular boiler 200 H. P., 1 Engine and 1 gen. unit, 250 volts D. C., 1 pump.
EMP—100. Last fiscal year output, 150,000 tons.
Sales Agency, Burlington Coal Co., Cincinnati, O.

COAL VALLEY MINING CO.
General Office, Charleston, W. Va.
Sylvia Mine; Drift, Chilton Seam, 58 to 66 in. thick.
PO—Clothier, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Coal Run Div.
PR—A. E. Moore....Charleston, W.Va.
TR—A. E. Moore, " "
CE—Romine & Snyder, " "
GM—W. M. Gillie.....Clothier, W.Va.
GS—W. M. Gillie, " "
PA—W. M. Gillie, " "
MS—Chas. Lax, " "
S of H—3 Elec. loco; track gauge 42 in.
S of M—6 Elec. mach.
PP—2 Water tube boilers, 1 gen. unit 250 volts D. C., 1 pump; Power purchased.

COALBURG COLLIERY CO.
Ronda Mine, Drift, Coalburg Seam, 5 to 7 ft. thick.
PO—Ronda, W. Va. SP—Same. CTY—Kanawha. RR—C.& O.
PR—J. Q. Dickinson, Charleston,W.Va
TR—L. D. Burns .....Ronda, W.Va.
GM—L. D. Burns, " "
GS—S. W. Smith, " "
PA—S. H. Slack, " "
CE—S. S. Hampton, " "
EM—H. C. Biddison, " "
MM—T. H. Bickert, " "
EE—S. Hampton, " "
MS—Sam Smith, " "
SM—S. H. Slack, " "
S of H—Mules and 4 elec. loco.
S of M—5 Elec. machines.
PP 3 boilers, 3 gen. units 250 volts D. C., 2 engines.
EMP—300. Last fiscal year output 125,000 tons.
Sales Agency, C. & O. C. & C. Co.

COALBURG-KANAWHA COAL CO.
A and B Mine, Drifts, A Mine, Coalburgh Seam, Lower Freeport, 6 ft. thick. B Mine, Belmont Seam, Up. Freeport, 3 3-4 ft. thick.
PO—Coalburgh, W. Va., SP—Same, CTY—Kanawha. RR—Ches. & Ohio, Main Line.
PR—W. S. Edwards, Coalburgh, W.Va.
GM—J. A. Willis, " "
GS—J. A. Willis, " "
EE—J. S. Edwards, " "
SM—Fred W. McConnell, " "
TR—Fred Stanton....Charleston, W. Va.
EM—J. B. T. Eaton, " "
S of H—Mules, and 2 elec. loco., track gauge 40 in.
S of M—5 Elec. machines.
PP—2 Return tubular boilers, 250 H. P., 1 gen. unit 270 volts D C.
EMP—112. Last fiscal year output 84,500 tons.
Sales Agency, Burlington Coal Co., Cincinnati, O., and E. J. Hickey Transportation Co., Covington, Ky.

COLUMBUS IRON & STEEL CO., (THE)
General Office, Columbus, Ohio.
No. 1 Mine, Drift, No. 2 Gas Seam, 5 to 6 ft. thick.
PO—Marting, W. Va., SP—Same, CTY—Fayette. RR—K. & M.
PR—J. G. Battelle.....Columbus, O.
TR—J. C. Miller, " "
GM—J. H. Frantz, " "
PA—C. M. Fenton, " "
GS—J. D. Jones.....Marting, W.Va.
MM—Jesse Pennington, " "
EE—Jesse Pennington, " "
EM—J. B. Eator.....Charleston, W.Va
SCO—Buyer, C. A. Barnett, Marting, Va.
S of H—6 Elec. loco., track gauge 42 in.
S of M—8 Elec. mach.
PP—4 Erie City return tubular boilers, total 600 H. P., 2 gen. units 250 volts D. C., 3 pumps.
EMP—260. Coke ovens, 84 Bee Hive. Last fiscal year output 140,717 tons.
Sales Agent, J. C. Miller, Columbus, O.

CONNELLSVILLE BASIN COKE CO.
Controlled by Receivers of (Central Iron & Steel Co.)
General Office, Harrisburg, Pa.
Slope Mine; Up. Freeport Seam, 50 to 52 in. thick.
PO—Rock Forge, W. Va.; SP—Richard, W. Va.; CTY—Monongalia; RR—M. & K.
PR—Francis J. Hall....Harrisburg, Pa.
TR—L. D. Perry, " "
SCO—Deckers Creek Supply Co., Rock Forge, W. Va.
Coke ovens 200 Bee Hive.
Operations discontinued since June 30, 1913. May start again if market condition change.

CONNELLSVILLE COAL & COKE CO
Sold to Superior Connellsville Coke Co.

CONSOLIDATION COAL CO., THE
General Office, Continental Building, Baltimore, Md.
101 Mines in Md., West Va., Pa., and Ky.
Chairman of Board, C. W. Watson, Baltimore, Md.
PR—J. H. Wheelwright, " "
Secy—T. K. Stuart, " "
Mgr. of Trans—W. L. Andrews, " "
Genl. Auditor—A. S. Dunham, " "
VP—F. S. Landstreet, Bankers Trust Bldg., New York, N. Y.
VP—Geo. T. Watson..Fairmont, W. Va.
TR—S. L. Watson, " "
GM—F. R. Lyon, " "
PA—A. T. Watson, " "
PA—Asst., F. C. Davis, " "
CE—Frank Haas, " "
CE—Asst., J. C. Gaskill, " "
Chief Engineer, All Divisions—John G. Smyth .....Fairmont, W. Va.
Supt. P. & M. Dept.—R. L. Kingsland, Fairmont, W. Va.
Eng. of Tests—R. E. Rightmire, Fairmont, W. Va.
Live Stock Buyer—Frank Amos, Fairmont, W. Va.
Genl. Mgr. of Sales—F. W. Wilmire, Bankers Trust Bldg., New York, N.Y.
Western Mgr. of Sales—E. M. Mancourt, Fisher Bldg., Chicago, Ill.

OFFICIALS OF WEST VIRGINIA DIVISION
MGR—H. H. Watson....Fairmont, W.Va.
MGR Asst—Brooks Fleming, Jr. Fairmont, W.Va.
Div. Eng—F. K. Day, " "
Asst. Div. Eng—L. A. Riggs, " "
GS—C. H. Tarleton, " "
Local Auditor—M. E. Ashcraft, Fairmont, W.Va.
Gen SM—Frank Neely, " "

Consolidation No. 30 Mine; Drift; Pittsburgh Seam, 81 to 102 in. thick.
PO—Beechwood, W. Va.; SP—Consolidation No. 30, W. Va.; CTY—Monongalia; RR—B. & O.
MS—W. H. Hess.....Beechwood, W.Va.
SM—Chas. Barker, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 1 Elec. mach.
PP—1 Erie City R turn tubular boil r, 150 H. P., 1 100 K. W. generator, 250 volts D. C.
EMP—73. Coke ovens, 46 Bee Hive. Last fiscal year output 25,193 tons.

Consolidation No. 45 Mine; Drift; Pittsburgh Seam, 84 to 103 in. thick.
PO—Scottdale, W. Va.; SP—Consolidation No. 45, W. Va.; CTY—Marion; RR—B. & O.
MS—W. H. Hess.....Scottdale, W.Va.
SM—E. J. Hunsaker, " "
S of H—Mules and rope; track gauge 42 in.
S of M—Hand and 2 Elec. mach.
PP—2 Erie City return tubular boilers, total 225 H. P., 1 100 K. W. generator 250 volts D. C., 1 pump.
EMP—97. Coke ovens, 49 Bee Hive. Last fiscal year output 36,720 tons.

Consolidation No. 24 Mine; Drift; Pittsburgh Seam, 74 to 89 in. thick.
PO—Montana Mines, W. Va.; SP—Consolidation No. 24, W. Va.; CTY—Marion; RR—B. & O.
MS—R. E. Garrett, Montana Mines, W.Va
SM—C. H. Bartlett, " "
S of H—Mules, rope and 2 Elec. loco.; track gauge 41 in.
S of M—Hand and 9 Elec. mach.
PP—2 Hart Bros., 2 Atlas, 3 Erie City return tubular boilers, total 720 H P., 1 150 K. W. gengrators 250 volts D. C., 1 pump.
EMP—218. Coke ovens, 150 Bee Hive. Last fiscal year output 96,828 tons.

Consolidation No. 38 Mine; Shaft; Pittsburgh Seam, 80 to 103 in. thick.
PO—Fairmont, W. Va.; SP—Consolidation No. 38, W. Va.; CTY—Marion; RR—B. & O.
MS—John C. Riggins..Fairmont, W.Va.
SM—W. J. LaFollette, " "
S of H—Mules, rope and 2 Elec. loco.; track gauge 42 in.
S of M—Hand and 8 Elec. mach.
PP—2 Brownell, 5 Erie City return tubular boilers, total 780 H. P., 1 150 K. W. Rot. 250 volts D. C., 6 phases, 60 cycles, 3 pumps. Purchase power.
EMP—317. Coke ovens, 36 Bee Hive. Last fiscal year output 147,733 tons.

Consolidation No. 26 Mine; Drift; Pittsburgh Seam, 78 to 108 in. thick.
PO—Watson, W. Va.; SP—Consolidation No. 26, W.Va.; CTY—Marion; RR—B. & O.
MS—John C. Riggins....Watson, W.Va.
SM—J. C. Crawford, " "
S of H—Mules and 5 Elec. loco.; track gauge 42 in.
S of M—Hand and 14 Elec. mach.
PP—3 Hart Bros., 5 Erie City return tubular boilers, total 1000 H. P., 2 150 K. W. generators, 2 150 K. W. Rot. 250 volts D. C., 3 phases, 60 cycles, 2 pumps. Central station for rotaries.
EMP—332. Coke ovens, 94 Bee Hive. Last fiscal year output 281,891 tons.

Consolidation No. 56 Mine Drift; Pittsburgh Seam, 91 to 101 in. thick.
PO—Watson, W. Va.; SP—Consolidation No. 56, W. Va.; CTY—Marion; —B. & O.

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CONSOLIDATION COAL CO.—Continued.

MS—John C. Riggins.....Watson, W.Va
SM —J. C. Crawford, " "
S of H—Mules, rope and 2 Elec. loco.; track gauge 36 in.
S of M—Hand and 8 Elec. mach.
PP—1 Erie City, 2 Gem City, 1 Hart Bros. return tubular boilers, total 360 H. P., 1 150 K. W. Rotary 250 volts D. C., 3 phases, 60 cycles, 1 pump. Central station for rotary and 1000 gal. pump.
EMP—89. Coke ovens, 89 Bee Hive. Last fiscal year outpjut 53,762 tons.

Consolidation Nos. 53 22, 43, 63 Mines; Drifts and Slope; Pittsburgh Seam, 84 to 103 in. thick.
PO—Monongah, W. Va. SP—Same; CTY—Marion; RR—B. & O.
MS—Geo. E. Peddicord, Monongah, W.Va.
SM—C. E. Bartlett, "
S of H—Mules, rope 1 Sorage battery and 18 Elec. loco.; track gauges 42 in.
S of M—Hand and 31 Elec mach.
PP—1 Monroe, 19 Erie City, 1 Gem City, return tubular boilers, total 2580 H. P., 4 150 K. W. Rotaris, 3 150 K. W. generators 250 volts D. C. 6 phase, 60 cycles, and 3 phase, 60 cycles, 9 pumps. Central station for rotaries and 1000 gal. pump.
EMP—1237. Coke ovens, 270 Bee Hive. Last fiscal year output 1,198,794 tons.

Consolidation No. 68 Mine; Drift; Pittsburgh Seam, 81 to 98 in. thick.
PO—Everson, W. Va.; SP—Consolidation No. 66, W. Va.; CTY—Marion; RR—B. & O.
MS—Rush Miller.....Everson, W.Va.
SM—H. F. Bennett, " "
S of H—Mules, rope and 1 Gasoline loco.; track gauge 42 in.
S of M—Hand.
PP—1 Armstrong, 1 Erie City return tubular boilers, total 225 H. P.
EMP—80. Coke ovens, 12 Bee Hive. Last fiscal year output 94,910 tons.

Consolidation No. 59 Mine; Drift; Pittsburgh Seam, 89 in. thick.
PO—Middleton, W. Va.; SP—Consolidation No. 59, W. Va.; CTY—Marion; RR—B. & O.
MS—Rush Miller.....Middleton, W.Va.
SM—Lloyd Bennett, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand.
PP—250 volts D. C. Power from Mine No. 47.
EMP—24. Last fiscal year output, 36,368 tons.

Consolidation No. 36 Mine; Drift; Pittsburgh Seam, 81 to 98 in. thick.
PO—Middleton, W. Va.; SP—Consolidation No. 36, W. Va.; CTY—Marion; RR—B. & O.
MS—Rush Miller.....Middleton, W.Va.
SM—Lloyd Bennett, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 5 Elec. mach.
PP—1 150 K. W. Rotary 250 volts D. C., 6 phase, 60 cycles, 2 pumps. Power from Central station.
EMP—190. Last fiscal year output 164,953 tons.

Consolidation No. 47 Mine; Drift; Pittsburgh Seam, 74 to 98 in. thick.
PO—Middleton, W. Va.; SP—Consolidation No. 47, W. Va.; CTY—Marion; RR—B. & O.
MS—Rush Miller.....Middleton, W.Va.
SM—Lloyd Bennett, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 10 Elec. mach.
PP—2 Erie City return tubular boilers, total 200 H. P., 1 150 K. W. Rotary 250 volts D. C., 6 phase, 60 cycles, 1 pump. Power from Central station.
EMP—181. Last fiscal year output 262,769 tons.

Consolidation No. 28 Mine; Drift; Pittsburgh Seam, 91 to 98 in. thick.
PO—Middleton, W. Va.; SP—Consolidation No. 28, W. Va.; CTY—Marion; RR—B. & O.
MS—Rush Miller.....Middleton, W.Va.
SM—Lloyd Bennett, " "
S of H—Mules, rope and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 4 Elec. mach.
CTY—Harrison; RR—B. & O.
MS—Luke Murray,
R. F. D. No. 3,Clarksburg, W.Va.
PP—2 Erie City, 1 Wagner Palmros, return tubular boilers, total 280 H. P. 250 volts D. C., 2 pumps. Power
SM from Mine No. 47.
S of Last fiscal year output 39,417 tons.

S of Consolidation No. 67 Mine; Slope; Pittsburgh Seam, 64 to 101 in. thick.
PO—Hutchinson, W. Va.; SP—Consolidation No. 67, W. Va.; CTY—Marion; RR—B. & O.
MS—K. D. Bailey....Hutchinson, W.Va.
SM —Homer Springston, " "
S of H—Mules and rope; track gauge 42 in.
S of M—Hand and Elec. mach.
PP—2 Penna. Boiler Works return tubular boilers, total 180 H. P. 250 volts D. C., 2 pumps. Power from Mine No. 84 and Central power plant.
Coke ovens, 50 Bee Hive.

Consolidation No. 84 Mine; Slope; Pittsburgh Seam, 84 to 90 in thick.
PO—Hutchinson, W. Va.; SP—Consolidation No. 67, W. Va.; CTY—Marion; RR—B. & O.
MS—K. D. Bailey....Hutchinson, W.Va.
SM —Homer Springston, " "
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—Hand and 7 Elec. mach.
PP—2 Erie City return tubular boilers, total 200 H. P., 2 150 K. W. Rotary, 3 phase, 60 cycles, 250 volts D. C., 2 pumps. Power from Central power plant.
EMP—309. Last fiscal year output 210,333 tons.

Consolidation No. 49 Mine; Slope; Pittsburgh Seam, 65 to 103 in. thick.
PO—Enterprise, W. Va.; SP—Consolidation No. 49, W. Va.; CTY—Harrison; RR—B. & O.
MS—Rush Miller.....Enterprise, W.Va.
SM—Albert Hurst, " "
S of H—Mules, rope and 2 Elec. loco.
S of M—Hand and 9 Elec. mach.
PP—3 Erie City return tubular boilers, total 375 H. P., 250 volts D. C., 1 pump. Power from Mine No. 40.
EMP—209. Coke ovens, 60 Bee Hive.

Consolidation No. 40 Mine; Drift; Pittsburgh Seam, 89 to 102 in. thick.
PO—Viropa, W. Va.; SP—Consolidation No. 40, W. Va.; CTY—Harrison; RR—B. & O.
MS—E. B. Courtney.....Viropa, W.Va.
SM—W. O. Bice. " "
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—Hand and 9 Elec. mach.
PP—2 150 K. W. Roary, 3 phase, 60 cycles, 250 volts D. C. Power from Central power plant.
EMP—378. Last fiscal year output 187,768 tons.

Consolidation No. 32 Mine; Drift; Pittsburgh Seam, 78 to 101 in. thick.
PO—Shinnston, W. Va. SP—Consolidation No. 32, W. Va.; CTY—Harrison; RR—B. & O.
MS—C. H. Higinbotham, Shinnston, W.Va.
SM—J. D. Warfield, " "
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—Hand and 8 Elec. mach.
PP—2 Erie City return tubular boilers, total 200 H. P., 2 150 K. W. Rotaries, 3 phase, 60 cycles, 250 volts D. C., 2 pumps. Power from Central power plant.
EMP—303. Last fiscal year output 309,356 tons.

Consolidation No. 66 Mine; Drift; Pittsburgh Seam, 92 to 103 in. thick.
PO—Shinnston, W. Va.; SP—Consolidation No. 66, W. Va. CTY—Harrison; RR—B. & O.
MS—C. H. Higinbotham, Shinnston, Wa.Va.
SM—W. R. Robey, "
S of H—Mules and 1 Elec loco.; track gauge 42 in.
S of M—Hand and 6 Elec. mach.
PP—2 Erie City return tubular boilers, total 300 H. P., 1 100 K. W. 250 volts D. C.
EMP—145. Last fiscal year output 87,870 tons.

Consolidation No. 42 Mine; Drift; Pittsburgh Seam, 85 to 89 in. thick.
PO—Shinnston, W. Va.; SP—Consolidation No. 42, W. Va.; CTY—Harrison; RR—B. & O.
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 5 Elec. mach.
PP—3 Erie City return tubular boilers, total 300 H. P., 1 150 K. W. Rotary, 6 phase, 60 cycles, 250 volts D. C. 2 pumps.
Last fiscal year output 30,636 tons.

Consolidation No. 51 Mine; Drift; Pittsburgh Seam, 93 to 100 in. thick.
PO—Shinnston, W. Va.; SP—Consolidation No. 51, W. Va.; CTY—Harrison; RR—B. & O.
MS—J. H. Nuzum.....Shinnston, W.Va.
SM—M. W. Hall, " "
S of H—Mules, rope and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 5 Elec. mach.

PP—1 Hart Bros. and 1 Brownell return tubular boilers, total 120 H. P., 250 volts D. C., 1 pump. Power from Mine No. 65.
EMP—239. Last fiscal year output 150,190 tons.

Consolidation No. 65 Mine; Drift; Pittsburgh Seam, 93 to 112 in. thick.
PO—Shinnston, W. Va.; SP—Consolidation No. 65, W. Va.; CTY—Harrison; RR—B. & O.
MS—J. H. Nuzum.....Shinnston, W.Va.
SM—M. W. Hall, " "
S of H—Mules, rope and 1 Elec. loco.; track gauge 43 in.
S of M—Hand and 5 Elec. mach.
PP—2 Jeffrey return tubular boilers, total 200 H. P., 1 150 K. W. Rotary, 3 phase, 60 cycles, 250 volts D. C., 2 pumps. Power from Cenral station.
Last fiscal year output 22,969 tons.

Consolidation No. 21 Mine; Drift; Pittsburgh Seam, 87 to 108 in. thick.
PO—Gypsy, W. Va.; SP—Consolidation No. 21, W. Va.; CTY—Harrison; RR—B. & O.
MS—D. A. Reed.....Gypsy, W.Va.
SM—B. L. Duty, " "
S of H—Mules, rope and 2 Elec. loco.; track gauge 48 in.
S of M—Hand and 11 Elec. mach.
PP—6 Erie City return tubular boilers, total 750 H. P., 2 150 K. W. generators, 250 volts D. C., 2 pumps.
EMP—271. Coke ovens, 80 Bee Hive. Last fiscal year output 185,860 tons.

Consolidation No. 55 Mine; Drift; Pittsburgh Seam, 96 to 101 in. thick.
PO—Meadowbrook, W. Va.; SP—Consolidation No. 55, W. Va.; CTY—Harrison; RR—B. & O.
MS—Thos. Jarrett, Jr., Meadowbrook, W.Va.
SM—J. Carl Hustead, " "
S of H—Mules and 1 Elec. loco.
S of M—Hand and 4 Elec. mach.
PP—2 Erie City return tubular boilers, total 300 H. P. ,1 100 K. W. generator, 250 volts D. C.
EMP—156. Coke ovens, 50 Bee Hive. Last fiscal year output 65,968 tons.

Consolidation No. 33 Mine; Drift; Pittsburgh Seam, 93 to 102 in. thick.
PO—Glen Falls, W. Va.; SP—Consolidation No. 33, W. Va.; CTY—Harrison; RR—B. & O.
MS—A. C. Ice.....Glenn Falls, W.Va.
SM—J. T. Curry, " "
S of H—Mules, gravity, and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 3 Elec. mach.
PP—250 volts D. C., 3 pumps. Power from Mine No. 27.
Coke ovens, 22 Bee Hive. Last fiscal year output 12,188 tons.

Consolidation No. 27 Mine; Drift; Pittsburgh Seam, 87 to 103 in. thick.
PO—Glen Falls, W. Va.; SP—Consolidation No. 27, W. Va.; CTY—Harrison; RR—B. & O.
MS—A. C. Ice.....Glen Falls, W.Va.
SM—J. T. Curry, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 4 Elec. mach.
PP—2 150 K. W. Rotaries, 6 phase, 60 cycles, 250 volts D. C. Power from Central station.
EMP—93. Last fiscal year output 59,995 tons.

Consolidation No. 48 Mine; Drift; Pittsburgh Seam, 88 to 100 in. thick.
PO—Glen Falls, W. Va.; SP—Consolidation No. 48, W. Va.; CTY—Harrison; RR—B. & O.
MS—A. C. Ice.....Glen Falls, W.Va.
SM—J. T. Curry, " "
S of H—Mules and 1 Elec. loco.; track gauge 44 in.
S of M—Hand and 4 Elec. mach.
PP—250 volts D. C. Power from Mine No. 27.
EMP—102. Last fiscal year output 69,172 tons.

Consolidation No. 35 Mine; Drift; Pittsburgh Seam, 76 to 98 in. thick.
PO—Box 616, Clarksburg, W. Va.; SP—Consolidation No. 35, W. Va.; CTY—Harrison; RR—B. & O.
MS—Luke Murray, Box 616, Clarksburg, W.Va.
SM—H. M. Rogers, Box 616, Clarksburg, W.Va.
S of H—Mules and 1 Elec. loco.
S of M—Hand and 5 Elec. mach.
PP—1 150 K. W. Rotary, 250 volts D. C., 6 prase, 60 cycles, 3 pumps. Power from Central station.
Last fiscal year output 18,425 tons.

Consolidation No. 25 Mine; Slope; Pittsburgh Seam; 81 to 120 in. thick.
PO—Box 616, Clarksburg, W. Va.; SP—Consolidation No. 25, W. Va.; CTY Harrison; RR—B. & O.
MS—Luke Murray, Box 616, Clarksburg, W.Va.
SM—H. M. Rogers, Box 616, Clarksburg, W.Va.
S of H—2 Elec. loco.; track gauge 36 in.
S of M—Hand and 9 Elec. mach.
PP—2 Hart, 1 Jeffrey, and 1 Erie City return tubular boilers, total 475 H. P., 250 volts D. C., 4 pumps. Power from Mine No. 27 and Central station.
EMP—245. Last fiscal year output 228,798 tons.

Consolidation No. 58 Mine; Drift; Pittsburgh Seam, 76 to 105 in. thick.
PO—R. F. D. No. 3, Clarksburg, W. Va.; SP—Consolidation No. 58, W. Va.;
SM—L. B. Nixon, R. F. D. No. 3,Clarksburg, W.Va.
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 3 Elec. mach.
PP—250 volts D. C. Power from Mine No. 29.
Last fiscal year output 15,923 tons.

Consolidation No. 29 Mine; Drift; Pittsburgh Seam, 91 to 104 in. thick.
PO—R. F. D. No. 3, Clarksburg, W.Va.; SP—Consolidation No. 29, W. Va.; CTY—Harrison; RR—B. & O.
MS—Luke Murray, R. F. D. No. 3, Clarksburg, W.Va.
SM—L. B. Nixon, R. F. D. No. 3, Clarksburg, W.Va.
S of H—Elec. loco.; track gauge 42 in.
S of M—Hand and 5 Elec. mach.
PP—2 Erie City, 1 Morton & Reed return tubular boilers, total 330 H. P., 1 150 K. W. Rotary, 6 phase, 60 cycles, 250 volts D. C., 2 pumps. Power from Central station for rotary.
EMP—148. Last fiscal year output 107,520 tons.

Consolidation No. 52 Mine; Drift; Pittsburgh Seam, 87 to 98 in. thick.
PO—R. F. D. No. 3, Clarksburg, W. Va.; SP—Consolidation No. 52, W. Va.; CTY—Harrison; RR—B. & O.
MS—Luke Murray, R. F. D. No. 3, Clarksburg, W.Va.
SM—L. B. Nixon, R. F. D. No. 3, Clarksburg, W.Va.
S of H—Mules and rope; track gauge 42 in.
S of M—Hand and 8 Comp. air mach.
PP—2 Erie City, and 1 Acme return tubular boilers, total 325 H. P., 1 compressor, and 1 pump.
Last fiscal year output 32,527 tons.

Consolidation No. 39 Mine; Drift; Pittsburgh Seam, 74 to 96 in. thick.
PO—Lewis, W. Va.; SP—Consolidation No. 39, W. Va.; CTY—Harrison; RR—B. & O.
MS—P. B. Robinson.....Lewis, W.Va.
SM—C. Mason Linger, " "
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—Hand and 4 Elec. mach.
PP—1 Erie City and 1 Berger Bros. return tubular boilers, total 275 H. P., 1 150 K. W. generator, 250 volts D. C., 1 pump.
EMP—85. Last fiscal year output 45,202 tons.

Consolidation No. 60 Mine; Drift; Pittsburgh Seam, 64 to 72 in. thick.
PO—Lewis, W. Va.; SP—Consolidation No. 60, W. Va.; CTY—Harrison; RR—B. & O.
MS—P. B. Robinson.....Lewis, W.Va.
SM—C. Mason Linger, " "
S of H—Mules and gravity; track gauge 42 in.
S of M—Hand and 2 Elec. mach.
PP—250 volts D. C., 1 pump. Power from Hutchinson Coal Co., Byron Mine.
Last fiscal year output 8,437 tons.

Consolidation No. 44 Mine; Drift; Pittsburgh Seam, 49 to 87 in. thick.
PO—Lewis, W. Va.; SP—Consolidation No. 44, W. Va.; CTY—Harrison; RR—B. & O.
MS—P. B. Robinson.....Lewis, W.Va.
SM—C. Mason Linger, " "
S of H—Mules and Gravity; track gauge 42 in.
S of M—Hand and 2 Elec. mach.
PP—1 Erie City return tubular boiler(150 H. P., 1 pump, 1 75 K. W. generator, 250 volts D. C.
Last fiscal year output 12,826 tons.

Consolidation No. 64 Mine; Drift; Pittsburgh Seam, 78 to 97 in. thick.
PO—Lewis, W. Va.; SP—Consolidation No. 64, W. Va.; CTY—Harrison; RR—B. & O.
MS—P. B. Robinson.....Lewis, W.Va.
SM—C. Mason Linger, " "
S of H—Mules; track gauge 42 in.
S of M—Hand and 4 Comp. air mach.
PP—2 Erie City return tubular boilers, total 300 H. P., 1 compressor, 1 pump.
Last fiscal year output 17,867 tons.

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MINING CATALOGUES

Consolidation No. 37 Mine; Drift; Pittsburgh Seam, 84 to 102 in. thick.
PO—Berryburg, W. Va.; SP—Consolidation No. 37, W. Va.; CTY—Barbour; RR—B. & O.
MS—W. W. Ferguson...Berryburg, W.Va.
SM—W. F. Roger, " "
S of H—Mules and 4 Elec. loco.; track gauge 42 in.
S of M—Hand and 12 Elec mach.
PP—2 Erie City, 5 Bodger Bros. return tubular boilers, total 1050 H. P., 3 100 K. W. generators, 250 volts D. C.
EMP—220. Last fiscal year output 233,882 tons.

Consolidation No. 50 Mine; Drift; Pittsburgh Seam, 75 to 100 in. thick.
PO—Adamston, W. Va.; SP—Consolidation No. 50, W. Va.; CTY—Harrison; RR—B. & O.
MS—A. A. Evans.....Adamston, W.Va.
SM—C. H. Pue, " "
S of H—Mules and 2 Elec. loco.; track gauge 44 in.
S of M—Hand and 6 Elec. mach.
PP—3 Erie City return tubular boilers, total 450 H. P., 2 100 K. W. generators, 250 volts D. C., 2 pumps.
Last fiscal year output 28,852 tons.

Consolidation No. 62 Mine; Drift; Pittsburgh Seam, 84 to 88 in. thick.
PO—Adamston, W. Va.; SP—Consolidation No. 62, W. Va.; CTY—Harrison; RR—B. & O.
MS—A. A. Evans.....Adamston, W.Va.
SM—C. H. Pue, " "
S of H—Mules and gravity; track gauge 44 in.
S of M—Hand and 4 Elec. mach.
PP—250 volts D. C. Power from Mine No. 50.
EMP—79. Last fiscal year output 44,917 tons.

Consolidation No. 54 Mine; Drift; Pittsburgh Seam 74 to 96 in. thick
PO—Haywood, W. Va.; SP—Consolidation No. 54, W. Va.; CTY—Harrison; RR—B. & O.
MS—Lowell Childs.....Haywood, W.Va.
SM—Alf Duty.....Lumberport, W.Va.
S of H—Mules and rope; track gauge 44 in.
S of M—Hand and 4 Elec. mach.
PP—2 Union Iron Works return tubular boilers, total 250 H. P., 1 100 K. W. generator, 250 volts D. C.
EMP—105. Last fiscal year output 67,533 tons.

Consolidation No. 23 Mine; Drift; Pittsburgh Seam, 96 in. thick.
PO—Haywood, W. Va.; SP—Consolidation No. 23, W. Va.; CTY—Harrison; RR—B. & O.
MS—Lowell Childs.....Haywood, W.Va.
SM—Alf Duty.....Lumberport, W. Va.
S of H—Mules; track gauge 44 in.
S of M—Hand and 4 Elec. mach.
PP—250 volts D. C. Power from Mine No. 54.
Last fiscal year output 10,437 tons.

CONSUMERS COAL & MINING CO.
"Camden" Mine, Drift, Pittsburgh No. 8 Seam, 4 ft. thick.
PO—Spilman, W.Va., SP—Same, CTY—Mason. RR—B.&O.
PR—B. D. Spilman..Warrenton, Va.
GM—M. G. Tyler.....Spilman, W.Va.
PA—M. G. Tyler, " "
GS—M. G. Tyler, " "
EM—M. G. Tyler, " "
EE—Pat Riley, " "
SCO—Consumers Coal & Mining Co.
SM—Frank Roush....Spilman, W.Va.
S of H—1 Elec. loco., track gauge 39 in.
S of M—5 Elec. machines.
PP—2 Erie reuurn tubular boilers, total 300 H. P., 2 pumps.
EMP—50. Last fiscal year output 300 tons.

COOPER-POCAHONTAS COAL CO.
PO—Mullens, W. Va.; SP—Same; CTY—Wyoming; RR—Virginian.
PR—Edw. Cooper....Bramwell, W.Va.
No report.

COOPER, J. CALVIN.
Cooper Mine; Drift, Seam, 66 to 78 in. thick.
PO—Davis, W. Va.; SP—Same; CTY—Tucker; RR—W. Md.
GM—J. Calvin Cooper....Davis, W. Va.
S of H—Mules; track gauge 35 in.
S of M—Hand.
PP—2 Gasoline engines, 1 pump.
EMP—9. Last fiscal year output 11,802 tons.

COPEN CREEK COAL CO. (THE)
General Office, 233 Arcade, Cleveland, O.
Vanwith Mine; Drift, Pgh. Seam, 72 to 120 in. thick.
PO—Bower, W. Va.; SP—Same; CTY—Braxon; RR—C. & C.
PR—George E. Meier....Cleveland, O.
GM—Robert Bursner, " "
PA—Robert Bursner, " "
GS—A. J. Salzer.....Bower, W.Va.
EE—A. J. Salzer, " "
EM—R. J. Tillson, " "
MS—H. Pi ree, " "
S of H—1 Elec. loco. and mules; track gauge 36 in.
S of M—3 Elec. mach. and hand.
PP—Power purchased.
EMP—89. Last fiscal year output 97,200 tons.
Sales Agent, Robt. Bursner, Cleveland, O.

CORA COAL & COKE CO.
Cora Mine, Drift, Seam 7 ft. thick.
PO—Cora, W. Va., SP—Same, CTY—Logan. RR—C. & O.
PR—C. W. Jones.....Cora, W.Va.
GM—C. W. Jones,.....Cora, W.Va.
CS—C. W. Jones, " "
PA—C. W. Jones, " "
TR—A. H. Land....Barboursville, W.Va.
CE—Beddow & McCorkle, Logan, W.Va
EM—Beddow & McCorkle, "
EE—James Wyatt.....Cora, W.Va.
MS—E. E. Russell, " "
SCO—Cora Coal &Coke Co., Buyer, P. H. Akers, Cora, W. Va.
S of H—4 Elec. loco.
S of M—4 Elec. machines.
PP—Purchase power.
EMP—About 100.
Sales agents, Producers Coal Co., Cincinnati Ohio.

CORONA COAL & COKE CO.
Out of business.
Harold Mine exhausted. No. 2 Mine now Taylor Collieries.

COTTAGE STREET COAL CO.
See S. H. Jordan.

CROWN COAL & COKE CO.
Drift Mine, Island Creek Seam, 60 in. thick.
PO—Crown, W. Va.; SP—Lax, W. Va.; CTY—Logan; RR—C. & O.
PR—J. W. Lax.....Crown, W. Va.
TR—J. W. Lax, " "
GM—J. W. Lax, " "
PA—J. W. Lax, " "
SCO—Address the Company " "
S of H—1 Elec. loco., track gauge 44 in.
S of M—3 Elec. mach.
PP—Boiler 150 H. P., gen. units 250 volts D. C.
EMP—60.
Output 500 tons daily.

CROZER COAL & COKE CO.
General Office, North American Bldg., Philadelphia Pa.
Nos. 1 and 2 Mines; Drift; No. 3, Pocahontas Seam 7 to 8½ ft. thick.
PO—Elkhorn, W. Va., SP—Same, CTY—McDowell; RR—N. & W., Main Line.
PR—John P. Crozer, Philadelphia, Pa.
VP—Louis P. Page, " "
TR Asst—L. Rodman Page, Jr., Philadelphia, Pa.
Secy—Edward C. Page....Elkhorn, W.Va.
GM—John J. Lincoln, Elkhorn, W.Va.
PA—J. H. Newton, " "
Asst GM—H. D. Smith, " "
MS—H. D. Smith, " "
EM—R. A. Ruff, " "
EE—Allen Raup, " "
SM—D. R. Whittaker, " "
S of H—5 Elec. loco. and mules; track gauge 44 in.
S of M—2 Elec. mach. and hand.
PP—6 Return tubular boilers, tota. 900 H. P., 3 gen. units 500 volts D. C., 3 pumps delivering water to surface.
EMP—450. Coke ovens, 200 Bee Hive. Last fiscal year output 282,914 tons coal; 29,251 tons coke.
Sales Agency, Crozer—Pocahontas Co., North American Bldg., Phila., Pa.

CRYSTAL BLOCK COAL & COKE CO.
General Office, Welch, W. Va.
PR—R. V. Shanklin.....Gary, W.Va.
TR—J. H. Barker, " "
GM—C. M. Gates.....Welch, W.Va.
PA—G. W. Kanode....." "
EM—L. A. Osborn.....Sprigg, W.Va.
EE—W. O. Hay, " "
MM—M. V. Crigger.....Rawl, W.Va.
SCO—Crystal Supply Co., " "
Sales Agency, Glen Alum Fuel Co., Cincinnati, O.

No. 1 Works; Drift, Wini and Coalburg Seam 48 to 28 in. thick.
PO—Rawl, W. Va.; SP—Same; CTY—Mingo; RR—N. & W.
MS—M. V. Crigger.....Rawl, W.Va.
S of H—2 Elec., 1 steam loco. and mules; track gauge 48 in.
S of M—4 Elec. mach.
PP—Power purchased.
EMP—150. Output 600 tons daily.

No. 2 Works; Drift, Wini and Coalburg Seams 48 to 52 in. thick.
PO—Sprigg, W. Va.; SP—Same; CTY—Mingo; RR—N. & W., Alma Spur.
MS—E. H. Gates.....Sprigg, W.Va.
S of H—3 Elec. loco.; track gauge 48 in.
S of M—4 Elec. mach.
PP—Power purchased.
EMP—125. New plant.

CRYSTAL COAL & COKE CO.
General Office, Bramwell, W. Va.
Crystal Mine; Drift; Pocahontas No. 3 Seam; 4½ ft. thick; washery.
PO—Crystal, W. Va.; SP—Mora, W. Va.; CTY—Mercer. RR—N. & W.
PR—L. C. Hausberough, Salem, Va.
TR—W. H. Thomas, Bramwell, W.Va.
GM—W. H. Thomas, " "
GS—W. J. Pritchard....McComas, W.Va.
SM—N. T. Roberts.....Crystal, W.Va.
MS—Eugene Powell, " "
EM—Eugene Powell, " "
MM—Owen Sizemore, " "
S of H—4 elec. locos and mules; track gauge 48 in.
S of M—Hand.
PP—4 Return tubular boilers total 300 H.P., 2 gen. units, 220 volts A. C., 3 phases, and 60 cycles, 2 pumps delivering water to surface, power purchased.
EMP—300; Coke ovens 150 Bee Hive. Last fiscal year output 210,000 tons.
Sales Agency, Flat Top Fuel Co., Bluefield, W. Va.

CUB FORK COAL CO.
Cub Fork Mine; Drift, Winifrede Seam, 84 in. thick.
PO—Yolyn, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Run Creek Br.
PR—W. E. Deegans....Mt. Hope, W.Va.
GM—W. E. Deegans, " "
TR—E. C. James.....Yolyn, W.Va.
CE—W. G. Wilkins Co., Pittsburgh, Pa., and Huntington, W. Va.
S of H—2 Elec. loco.; track gauge 44 in.
S of M—Elec. mach.
PP—Power purchased.
EMP—125.

CUMBERLAND CANNEL COAL CO.
1 Mine in W. Va., 1 Mine in Kentucky; Gem Pocahontas Mine; Davy Seam, 38 in. thick.
PO—Lex, W. Va.; SP—Robley, W. Va.; CTY—McDowell; RR—N. & W.
PR—James P. Flanagan....Lex, W.Va.
MS—James P. Flanagan, " "
TR—J. H. Henchey, " "
GM—J. B. Miller, " "
GS—Thos. Daugherty, " "
EM—G. J. Cooper, " "
SCO—Bluefield Hardware Co., " "
S of H—Mules.
S of M—Hand.
EMP—30.
Loading 150 tons per day.
Sales Agent, J. H. Henchey, Lex, W. Va.

CUMBERLAND COAL CO.
General Office, Baltimore, Md.
Douglas Mine, Drift, Lower Kittanning Seam. 4 to 8 ft. thick.
PO—Albert, W. Va., SP—Douglas, W. Va., CTY—Tucker. RR—West Va. Div. Western Maryland.
PR—Wm. H. Gorman..Baltimore, Md.
TR—J. W. McMillan, " "
GM—Douglas Gorman, " "
PA—Douglas Gorman, " "
GS—Jas. J. Dobbie,..Albert, W.Va.
EM—J. A. Smith, " "
MM—Harry Lipscomb, " "
EE—Frank Budig, " "
SCO—The Douglas Co., Buyer, W. M. Faw, Albert, W. Va.
S of H—Horses, 3 Steam loco., and 3 elec. loco., track gauge 40 in.
S of M—Hand, and 5 comp. air mach.
PP—3 Return tubular boilers, total 450 H. P., 1 gen. unit 550 volts D. C., 1 air comp. and 5 pumps.
EMP—300. Last fiscal year output 168,563 tons. Coke ovens, 125 Bee Hive.

DAKOTA COAL & COKE CO.
PR—R. A. Dornon, New Alexandria, Pa.
TR—Doty Guthrie, " "
GM—E. B. Rowe....Fairmont, W.Va.
GS—E. B. Rowe, " "
PA—E. B. Rowe, " "
CE—E. B. Rowe, " "
EM—J. A. Alstetter, Clarksburg, W.Va
MM—T. S. Hardesty, " "
SCO—Dakota Store Co., Buyer, E. B. Rowe, Fairmont, W. Va.
Sales Agency, Commonwea'th Fuel Co.

Dakota No. 1. Shaft Sewickley Seam, 6 ft. thick
PO—Fairmont, W. Va., SP—Sparling Siding, W. Va. CTY—Marion. RR—B &O.
S of H—Mules, track gauge 42 inches.

Dakota No. 2. Shaft, Pittsburgh Seam 7 ft. 5 in. to 8 ft. 2 in. thick
PO—Fairmont, W. Va., SP—Sparling Siding, W. Va., CTY—Marion RR—B.&O., Paw Paw Branch
MS—W. H. Myers, Fairmont, W. Va.
SM—E. B. Rowe, " "
S of H—Mules, rope, 2 comp. air loco., track gauge 42 inches.
S of M—Pick, and 7 compressed air machines.
PP—3 Water tube boilers, total 400 H. P., 2 air comp. and 1 pump.
EMP—107.

DANIEL COAL CO.
See Templeton Coal Co.

DAVIS COAL & COKE CO.
General Office, Cumberland, Md.
PR—A. W. Calloway, " "
ASST TO PR—Jos. Thorpe " "
PA—Thomas K. Jenkins, Cumberland, Md.
CE—M. D. Kirk, ..Cumberland, Md.
GS—Robt. Maloney, Thomas, W. Va.
EM—S. B. Jeffries, " "
SCO—Buxton & Landstreet, Buyer, C H. Lantz, Thomas, W. Va.
Sales Agent, A. W. Calloway, Baltimore, Md.

Nos. 1, 2, and 3 Mines, Drifts, L. Kittanning Seam, 6 to 7 ft. thick.
PO—Weaver, W. Va. SP—Same. CTY Randolph. RR—W. M.
MS—H. H. Harrison, Weaver, W. Va.
S of H—Rope and mules.
S of M—Hand.
PP—7 boilers, total 700 H. P.
EMP—250.

Nos. 17, 19, 50 and 51 Mnies, Drifts, L. Kittanning and Bakerstown Seam, 3½ ft. thick.
PO—Beryl, W. Va. SP—West Virginia Junction, W. Va. CTY—Mineral. RR—W. M.
MS—O. Tibbetts, ... Beryl W. Va.
S of H—Elec. loco., rope and mules.
S of M—Hand.
PP—5 Boilers, total 400 H. P.
EMP—210.

No. 22 Mine, Shaft, Upper Freeport Seam, 4 ft. thick.
PO—Henry, W. Va. SP—Same. CTY—Grant. RR—W. M.
MS—Robert Grant, .. Henry, W. Va.
SM—L. E. Heskett, " "
S of H—Elec. loco.
S of M—Comp. air mach.
PP—8 boilers, total 1,200 H. P., gen. units, 550 volts D. C.
EMP—172.

Nos. 23, 24, 25, 26 Mines, Drifts, Kittanning and Up. Freeport Seams, 5 to 6 ft. thick.
PO—Thomas, W. Va. SP—Came. CTY—Tucker. RR—W. M.
MS—Charles Bashore, Thomas, W. Va.
SM—G. S. Kinzer, " "
S of H—Elec. loco.
S of M—Hand.
PP—24 boilers, total 3,600 H. P.
EMP—851.

Nos. 6, 14 and 20 Mines, Drifts, Pgh, and Up. Freeport Seams, 3½ and 11 ft. thick.
PO—Elk Garden, W. Va. SP—Same. CTY—Mineral. RR—W. M.
MS—J. E. Ott....Elk Garden, W.Va.
S of H—Gasoline loco., rope and mules.
S of M—Hand.
PP—5 boilers, total 500 H. P.
EMP—220.

No. 38 Mine, Shaft, L. Kittanning Seam, 5 ft. thick.
PO—Benbush, W. Va. SP—Same. CTY—Tucker. RR—W. M.
MS—Charles Bashore ...Thomas, W.Va.
SM—Elwood Dickens ...Benbush, W.Va
S of H—Elec. loco.
S of M—Hand.
PP—2 boilers, total 300 H. P. From Central power plant.

Nos. 39 and 40 Mines, Shafts, L. Kittanning Seam, 5 to 5½ ft. thick.
PO—Pierce, W. Va. SP—Same. CTY—Tucker, W. Va. RR—W. M.
MS—W. W. Brewer ....Pierce, W. Va.
S of H—Elec. loco.
S of M—Hand.
PP—4 boilers, total 600 H. P. Current from Central Station.

Nos. 23 and 25 Mines, Drifts, Up. Freeport Seam, 5 to 6 ft. thick.
PO—Thomas, W. Va. SP—Same. CTY—Tucker, W. Va. RR—W. M.
MS—Charles Bashore...Thomas, W.Va.
SM—W. S. Randall, " "
S of H—Elec. loco.
S of M—Hand.
PP—8 boilers toal 2,950 H. P.

Nos. 24, 26, 36 and 37 Mines, Drifts Up. Freeport and L. Kittanning 3½ to 6 ft. thick.
PO—Coketon, W. Va. SP—Thomas, W. Va. CTY—Tucker. RR—W. M
MS—P. J. Brennan ..Coketon, W.Va.
S of H—Elec. loco.
PP—From Central Power Station.

No. 41 Mine, Slope, L. Kittanning Seam, 3½ ft. thick.
PO—Coketon, W. Va. SP—Francis, W. Va. CTY—Tucker. RR—W. M.
MS—P. J. Brennan ..Coketon, W.Va
S of H—Elec. loco.
S of M—Hand.
PP—From Central Power Station.

DAVIS COLLIERY CO.
General Office, Elkins, W. Va.
Continued on Next Page.

DAVIS COLLIERY CO.—Continued.
PR—Hon. H. G. Davis, Elkins, W. Va.
VP—J. T. Davis, " "
TR—Arthur Lee, " "
GM—J. T. Davis, " "
Asst GM—R. B. Isner, " "
EM—R. J. Tillson, ..Coalton, "
EE—C. O. Gallaher, " "
SCO—Junior Mercantile Co., Buyer H. R. Jones, Coalton, W. Va.
Eastern Sales Mgr., F. F. Chadwick, Land Title Bldg., Phila. Pa.
Western Sales Manager, Maury Robinson, 8 East Long St., Columbus, Ohio.

No. 1 Colliery, Drift, Lower Kittanning 6 to 10 ft. thick.
PO—Coalton, W. Va., SP—Same, CTY—Randolph. RR—Coal & Coke Ry.
MS—Jos. Hoylman....Coalton, W.Va.
S of H—6 Elec. loco.; track gauge 42 in.
S of M—Hand, and 6 elec. mach.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units 550 volts D. C. 1 pump.
EMP—300. 250 Bee Hive coke ovens.
Last fiscal year output 257,882 tons coal; 87,197 tons coke.

No. 2 and No. 5 Collieries, Drifts, Lower Kittanning Seam, 6 to 10 ft. thick.
PO—Harding W. Va., SP—Roaring Creek Jct., W.Va., CTY—Randolph. RR—Coal & Coke Ry.
MS—Leslie Wilmoth..Harding, W.Va.
SM—J. P. Minear, " "
S of H—Mules and gravity plane, track guage 42 inches.
S of M—Hand.
EMP—76. Last fiscal year output 59,140 tons.

No. 3 Colliery, Drift, Lower Kittanning Seam, 6 to 7 ft. thick.
PO—Harding, W. Va., SP—Same, CTY—Randolph. RR—Western Md.
MS—A. C. Davis.....Harding, W.Va.
SM—J. P. Minear, " "
S of H—3 Elec. loco., track gauge 45 in.
S of M—Hand and 4 Elec. mach.
PP—550 volts D. C.
EMP—150. 85 Bee Hive coke ovens.
Last fiscal year output 133,199 tons coal, and 39,712 tons coke.

No. 4 Colliery, Drift, Lower Kittanning Seam, 5 to 6 ft. thick.
PO—Junior, W. Va., SP—Same, CTY—Barbour. RR—Western Maryland
MS—W. S. Wilson....Junior, W.Va.
SM—L. D. Shure, " "
S of H—Rope and mules; track gauge 42 in.
S of M—Hand.
PP—1 Erie City 150 H. P. boiler.
EMP—115. 51 Bee Hive coke ovens.
Last fiscal year output 70,734 tons coal; 15,708 tons coke.

No. 10 Colliery, Drift, Pittsburgh No. 8 Seam, 6 to 9 ft. thick.
PO—Bower, W. Va., SP—Same, CTY—Braxton. RR—Coal & Coke.
MS—Thos. Davies.....Bower, W.Va.
SM—C. J. Burton, " "
S of H—Mules and 3 Elec. loco.; track gauge 42 inches.
S of M—Hand and 8 Elec. mach.
PP—3 Erie City return tubular boilers, total 450 H. P., 2 gen. units 550 volts D. C. 1 pump.
EMP—165. Last fiscal year output 150,557 tons.

No. 11 Colliery, Drift, Pittsburgh No. 8 Seam, 6 to 9 ft. thick.
PO—Bower W. Va., SP—Copen, W.Va., CTY—Braxton. RR—Coal & Coke.
MS—Thos. Davis.....Bower, W.Va.
SM—C. J. Burton, " "
S of H—Mules and 1 elec. loco., track gauge 42 in.
PP—1 Return tubular 50 H. P. boiler, 1 pump.
EMP—75. Last fiscal year output 84,577 tons.

DAVIS, T. B., ESTATE OF.
General Office, Piedmont, W. Va.
T. B. Davis Mine, Drift, Pittsburgh Seam 6 to 8½ ft. thick.
PO—Flemington, W. Va., SP—Same, CTY—Taylor. RR—B. & O.
GM—W. E. Heskitt, Piedmont, W.Va.
PA—Wm. Drainer, Flemington, W.Va.
MF—Wm. Drainer....Flemington, W.Va.
SCO—T. B. Davis Mine Store, Buyer, J. D. Newhouse, Flemington, W Va.
S of H—Rope.
S of M—Hand.
PP—1 Roller, 150 H. P., 1 pump.
EMP—62. Last fiscal year output 43,440 tons.
Sales Agent, W. E. Heskitt, Piedmont, W. Va.

DAVY-POCAHONTAS COAL CO.,
General Office Baltimore Maryland.
No. 1 and No. 2 Mines, Drifts, War Creek and Sewell Seams. War Creek 5 to 8 ft. thick, Sewell 3 to 4 in. thick.
PO—Roderfield, W. Va., SP—Erin, W. Va., CTY—McDowell. RR—Norfolk & Western.
PR—W. L. Taylor....Baltimore, Md.
VP—R. E. Wood, " "
TR—G. L. Wood, " "
Sec—G. L. Wood, " "
GS—P. A. Grady,..Roderfield, W.Va.
PA—Earl McCoy, " "
SM—Earl McCoy, " "
EE—J. W. Lindsey, " "
EM—G. J. Cooper.....Welch, W.Va.
S of H—Mules and 2 elec. motors, track gauge 48 in.
S of M—Pick mining and 2 elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit 250 volts D. C. 2 pumps.
EMP—150. Last fiscal year output 89,000 tons.
Sales Agency, Baltimore, Md., Office.

DEITZ COLLIERY CO.
Deitz Mines, Drifts, No. 2 Gas Seam, 4 ft. thick, and No. 5 Splint Seam, 5 ft. thick.
PO—Wyndal, W. Va., SP—Same, CTY Fayette. RR—C. & O.
PR—F. P. Christian..Lynchburg, Va.
TR—T. A. Deitz....Vanetta, W.Va.
GM—T. A. Deitz, " "
GS—T. A. Deitz, " "
PA—T. A. Deitz, " "
MS—L. D. Moran....Wyndal, W.Va.
SM—John Dickinson, " "
S of H—1 Elec. and 1 Gasoline loco.; track gauge 40 in.
S of M—Hand
PP—Purchase power.
EMP—120. Last fiscal year output 40,490 tons.

DIXIE COAL WORKS.
Mines closed March 25, 1914.

DOUGLAS COAL CO.
Mine leased to Leckie Collieries Co.

DELMAR COAL CO.
General Office, Fairmont, W.Va.
Drift Mine; Pittsburgh Seam, 72 to 96 in. thick.
PO—Flemington, W.Va.; SP—Same; CTY—Taylor; RR—B. & O.
PR—J. F. Phillips, Fairmont, W.Va.
TR—Hugh T. Smith, " "
GM—C. D. Robinson, " "
PA—C. D. Robinson, " "
CE—West Virginia Engineering Co., Fairmont, W.Va.
MS—Perry Popee, Flemington, W.Va.
S of H—Mules; track gauge 42 in.
S of M—Hand.
Sales Agency, C. D. Robinson, Fairmont, W.Va.

DEVILS FORK COAL CO.
Drift Mine, Seam 48 in. thick.
PO—Mullens, W. Va.; SP—Devils Fork, W. Va.; CTY—Wyoming; RR—Virginian, Winding Gulf Br.
PR—Jairus Collins.....Goodwill, W.Va.
TR—L. N. Franz.....Mullens, W.Va.
GM—L. N. Franz, " "
GS—A. K. Minter, " "
S of H—Mules.
Just starting to operate, June 1st, 1915.

DRAPER COAL & COKE CO.
General Office, Roanoke, Va.
Draper Mine; Drift, Eagle Seam, 48 to 68 in. thick.
PO—Logan, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Guyan River Br.
PR—L. H. Vaughan.....Roanoke, Va.
TR—J. B. Vaughan, " "
GM—John Pullen.....Logan, W.Va.
PA—John Pullen, " "
MS—John Pullen, " "
CE—Beddow & McCorkle, " "
S of H—2 Elec. loco.; track gauge 44 in.
S of M—5 Elec. mach.
PP—1 Boiler 200 H. P., 1 gen. unit 250 volts D. C.
EMP—62. Last fiscal year output 53,000 tons.
Sales Agency, A. S. Nowlin & Co.

DRY BRANCH COAL CO.
Coalburg and Bellmont Mines.
PO—Dry Branch, W. Va. CTY—Kanawha.
No report.

DRY FORK COLLIERY CO.
General Office, Bluefield, W.Va.
Dry Fork Mine; Slope; War Creek Poca. Seam, 63 to 75 in. thick.
PO—Yukon, W.Va.; SP—Susanna, W. Va.; CTY—McDowell; RR—N & W.
PR—W. T. Williams, Bluefield, W.Va
GM—W. T. Williams, " "
PA—W. T. Williams, " "
TR—J. T. Wilson, " "
MS—W. H. Powell....Yukon, W.Va.
EM—H. J. Brook, ...Welch, W.Va.
SCO—Address the Co., Yukon, W.Va.
S of H—2 Elec. loco. and mules; track gauge 48 in.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—75. Last fiscal year output 121,000 tons.

DUN GLEN COAL CORP.
Dun Glen Mine, Drift.
PO—Thurmond, W. Va. SP—Same. CTY—Fayette.
MS—Walter Bland...Thurmond, W.Va.
SM—William Wilson, " "
S of H—Mules.
S of M—Hand.

EAGLE ISLAND COAL CO.
General Office, Huntington, W. Va.
Kistler Mine; Drift, Island Creek and Eagle Seams, 48 to 72 in. thick.
PO—Kistler, W. Va.; SP—Same CTY—Logan; RR—C. & O., G. V. Div.
PR—A. J. King....Charleston, W. Va.
GM—A. J. King, " "
PA—A. J. King, " "
TR—W. H. Cunningham, Huntington, W. Va.
EM—E. R. Rink.....Logan, W. Va.
MS—Edwin Jones.....Kistler, W. Va.
S of H—2 Elec. loco.; track gauge 44 in.
S of M—3 Elec. mach.
PP—1 Return tubular boilers, 150 H. P., gen. unit 250 volts D. C., 1 pump.
EMP—50.
Sales Agency, Wyatt Coal Co., Cincinnati, O.

EAST BANK MINING CO.
East Bank Mine, Drift; "Cedar Grove" Seam; 2 ft. 10 in. thick.
PO—East Bank, W. Va.; SP—Same, CTY—Kanawha. RR—C. & O.
PR—Edward Clark..East Bank, W.Va.
GM—A. M. Howery, " "
PA—A. M. Howery, " "
MS—A. M. Howery, " "
SM—A. M. Howery, "
S of H—Mules, track gauge 3 ft.
S of M—Hand.
EMP—25. Last fiscal year output 12,000 tons. Sales agent, C. & O. Coal Agency Co.

EAST COAST MINING CO.
Succeeded by Clarksburg Coal Co.

EAST GULF COAL CO.
General Office, Beckley, W.Va.
Drift Mine; New River Seam.
PO—Not yet named; CTY—Raleigh; RR—C. & O., Virginian, Winding Gulf Br.
PR—R. M. Snyder, Mt. Hope, W.Va.
TR—J. L. Bumgardner, Beckley, W.Va.
GM—S. M. Miller, " "
CE—E. M. Merrill, " "
S of H—Electric.

EAST LYNN COAL CO.
Sagamore Mine, Drift, Seam 45 to 60 in. thick.
PO—East Lynn, W. Va. SP—Same. CTY—Wayne. RR—N. & W.
PR—Isaac T. Mann..Bramwell, W.Va.
TR—A. J. Perry...East Lynn, W.Va.
GM—A. J. Perry, " "
GS—Okey Loyd, " "
PA—J. L. Arthur, " "
SM—J. L. Arthur, " "
MM—W. M. Porter, " "
EE—W. M. Porter, " "
EM—C. D. Boggess.....Ashland, Ky.
S of H—Mules and 1 elec. loco. Track gauge 42 in.
S of M—4 elec. mach.
PP—1 water tube boiler, 150 H. P., 1 gen. unit, 250 volts D. C.
EMP—91. Last fiscal year output 73,739.

ELK LICK COAL CO.
General Office, Scranton, Pa.
Spruce Knob Mine, Drift.
PO—Richwood, W. Va. SP—Same. CTY—Nicholas. RR—B. & O.
GM—F. L. Space.....Scranton, Pa.
PA—John L. Hamill..Richmond, W.Va.
MS—H. P. Jones, " "
SM—Richwood Store Co., Mgr. T. M. Richards, Richwood, W. Va.
S of H—Mules.
S of M—Hand.
EMP—40

ELK MANOR COAL CO.
Dorfee Mine, Drift. "Winifrede" Seam, 4 to 5 ft. thick.
PO—Dorfee, W. Va. SP—Same. CTY—Clay. RR—Coal & Coke Ry.
PR—P. H. Burlinghane, Cincinnati, O.
TR—Wm. Burlinghane, " "
GM—Wm. Burlinghane, " "
PA—John Connell.....Dorfee, W.Va.
MS—John Connell, " "
SM—A. Robinson, " "
CE—W. D. Sell....Charleston, W.Va.
EM—W. D. Sell, " "
EE—Gus Means .....Dorfee, W.Va.
S of H—1 elec. loco. Track gauge 42 in.
S of M—6 elec. mach.
PP—2 Erie water tube boilers, 2 gen. units, 250 volts D. C.
EMP—80. Last fiscal year output 55,000 tons.
Sales agent, Burlinghane Coal Co., Cincinnati, O.
Note—In hands of Receiver.

ELK RIDGE COAL & COKE CO.
Drift Mine, No. 3 Poca Seam, 72 to 84 in. thick.
PO—Northfork, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., North Fork Br.
PR—Isaac T. Mann....Bramwell, W. Va.
TR—L. E. Tierney....Powhatan, W.Va.
GM—L. E. Tierney, " "
GS—T. W. Fitzsimmons....Kyle, W. Va.
CE—G. H. Wilcox, " "
PA—A. K. Parker....Northfork, W.Va.
MS—Jas. Trail, " "
SM—W. F. Tate, " "
EE—E. B. Stone....Powhatan, W. Va.
S of H—3 Steam loco.; track gauge 44 in.
S of M—Hand.
PP—4 Return tubular boilers, total 290 H. P., 1 pump.
EMP—250. Last fiscal year output 113,844 tons.
Sales Agency, Pocohontas Fuel Co., New York, N. Y.

ELK RIVER COAL & LUMBER CO
General Office, Clay, W. Va.
Rich Run Mine, Drift, Boaring Creek Seam, 5 to 6 ft. thick.
PO—Widen, W. Va. SP—Same. CTY—Clay. RR—Buffalo Creek & Gauley R. R.
PR—J. M. Cameron, Harrisburg, Pa.
TR—J. M. Cameron, " "
GM—J. G. Bradley....Clay, W.Va.
PA—J. G. Bradley, " " "
GS—R. T. Price.....Widen, W. Va.
MS—W. H. Hornsby, " "
EM—J. A. Cosgrove, " "
MM—W. H. D. Scott, " "
CE—Baird Halberstadt, Pottsville, Pa.
SCO—Widen Store, Widen, W. Va. Buyer, Peter Bettinger.
S of H—8 Elec. loco. Track gauge 42 in.
S of M—8 Sullivan Elec. mach.
PP—4 Erie City return tubular boilers, total 600 H. P. 3 Gen. units 250 volts D.C.
EMP—300. Last fiscal year output 420,000 tons.
General Sales Manager, J. G. Bradley, Clay, W. Va.; Western Sales Manager, C. M. Anderson, Columbus, O.; Eastern Sales Agency, Ernest Law & Co., Philadelphia, Pa.

ELKHORN COAL & COKE CO.
Elkhorn Mine, Drift, Pocahontas No. 3 Seam, 8 ft. thick.
PO—Maybeury, W. Va., SP—Krag, W. Va., CTY—McDowell. RR—N. & W. (Switch back).
PR—Wm. C. Atwater, 1 Broadway, N.Y.
TR—Chas. P. Hutchins, 50 Congress, Boston, Mass.
GM—R. S. Ord....Maybeury, W.Va.
PA—R. S. Ord, " "
MS—J. R. Little, " "
EE—E. V. Bailey, " "
MM—E. V. Bailey, " "
EM—C. B. Smith..Landgraff, W.Va.
SM—W. C. Hall,..Maybeury, W.Va.
S of H—Mules ;3 steam loco., track gauge 3 ft. 8 in.
S of M—Hand.
PP—2 Return tubular boilers, total 300 H. P., 4 Engines.
EMP—275. 170 Bee Hive coke ovens. Last fiscal year output 207,000 tons.
Sales Agents, Wm. C. Atwater & Co., New York, N. Y.

ELKINS COAL & COKE CO.
General Office, Morgantown, W. Va.
PR—S. B. Elkins, No. 1 Broadway, New York, N. Y.
TR—T. Frank Burk..Morgantown, W.Va.
GM—Richard Elkins.....Phila., Pa
GS—J. B. Hanford, Morgantown, W.Va.
PA—C. F. Sutherland. " "
CHF E—B. J. McDermott " "
EM—B. J. McDermott, " "
MM—F. G. Mowery, Morgantown, W Va.
EE—F. G. Mowery, " "
SCO—West Virginia Mercantile Co., Buyer, J. E. Matingly, Morgantown, W. Va.
Sales Agent, S. B. Elkins, 1 Broadway, N. Y.

Mine No. 1, slope, Upper Freeport Seam, 4 ft. thick.
PO—Richard, W. Va. SP—Rock Forge, W. Va.; CTY—Monongalia; RR—M. & K. R. R.
MS—O. T. Barnard. Richard, W.Va.
SM—Davis Moore, " "

Continued on Next Page.

S of H—Rope and 4 elec. loco. Track gauge 44 in.
S of M—Hand.
PP—3 Erie return tubular boilers, total 450 H. P. 1 Gen. unit, 250 volts D. C., 2 pumps.
EMP—166. Coke ovens, 150 Bee Hive. Last fiscal year output 132,274.79 tons.

Mine No. 2; Slope; Upper Freeport Seam, 4 ft. thick.
PO—Bretz, W. Va. SP—Same. CTY—Preston. RR—M. & K. R. R.
MS—Joseph Hanford, Bretz, W. Va.
SM—H. B. Jackson, " "
S of H—7 Elec. loco.; track gauge 44 in.
S of M—Hand.
PP—8 Erie return tubular boilers, total 1200 H.P. 3 Gen. units, 250 volts D.C. and 2200 volts A. C. 3-phase 25-cycle, 3 pumps.
EMP—175. Coke ovens, 267 Bee Hive. Last fiscal year output 203,122.94 tons.

Mine No. 3; Slope; Upper Freeport Seam, 48 in. thick.
PO—Richard, W. Va. SP—Dellslow, W. Va. CTY—Monongalia. RR—M.&K.R.R.
MS—O. T. Barnard, Richard, W. Va.
SM—Davis Moore.....Richard, W.Va.
S of H—1 Elec. loco. Track gauge 44 in.
S of M—Hand.
PP—Power furnished from Mine No. 1.
EMP—18. Last fiscal year output 17,240.99 tons.

Mine No. 4; Slope; Upper Freeport Seam, 4 ft. thick.
PO—Kingwood, W. Va. SP—Same. CTY—Preston. RR—M. & K. R. R.
MS—I. B. Bowermaster, Kingwood, W. Va.
SM—H. P. Miller, Kingwood, W. Va.
S of H—3 Elec. loco. Track gauge 44 in.
S of M—3 Elec. machines and hand mining.
PP—2 Return tubular boilers, total 300 H.P. 1 Gen. unit 250 volts D.C.
EMP—84. Last fiscal year output 72,728.79 tons.

Mine No. 5; Slope; Pittsburgh Seam, 96 in. thick.
PO—Morgantown, W. Va. SP—Sabraton, W. Va.; CTY—Monongalia; RR—M. & K. R. R.
MS—Floyd Gandy, Morgantown, W. Va.
SM—Victor Cuppett, Morgantown, W. Va.
S of H—5 Elec. loco. Track gauge 44 in.
S of M—4 Elec. machines and hand mining.
PP—Purchase power. 3 pumps.
EMP—98. Last fiscal year output 120,363.92 tons.

Mine No. 6; Slope; Upper Freeport Seam, 4 ft. thick.
PO—Masontown, W. Va. SP—Same. CTY — Preston. RR—M.&K.R. R.
MS—H. F. Loftus, Masontown, W. Va.
SM—J. C. Long, Masontown, W. Va.
S of H—6 Elec. loco. Track gauge 44 in.
S of M—Hand.
PP—Power furnished from Mine No. 2. 3 pumps
EMP—163. Coke ovens, 80 Bee Hive. Last fiscal year output 212,124.97 tons.

Mine No. 7; Slope; Upper Freeport Seam, 4 ft. thick.
PO—Taylor, W. Va.; SP—Burk, W. Va. CTY—Preston. RR—M. & K. R. R.
MS—R. L. Wolfe.....Taylor, W.Va.
SM—C. W. Robinson, " "
S of H—2 Elec. loco. Track gauge 44 in.
S of M—Hand.
PP—Power furnished from Mine No. 2. 1 pump.
EMP—38. Last fiscal year output, 47,398.22 tons.

ELLIOTT SPLINT COAL CO.

York Mine; Drift. Coalburg Seam, 66 to 72 in. thick.
PO—Clay, W. Va.; SP—Same; CTY—Clay; RR—C. & O.
PR—George W. York.....Cleveland, O.
TR—L. E. Ralston, " "
GM—C. L. Voglesang.....Clay, W. Va.
PA—B. C. Barber, " "
MM—P. N. Clark, " "
EE—P. N. Clark, " "
MS—H. E. Taylor, " "
SCO—Address the Company, " "
EM—Romine & Snyder, Charleston, W.Va.
S of H—1 Elec. loco.; track gauge 42 in.
S of M—3 Elec. mach.
PP—2 Gem City return tubular boilers, total 300 H. P., gen. unit 250 volts D. C.
EMP—150. Last fiscal year output 83,911 tons.
Sales Agency, A. L. Warner, Cleveland, O., and Victoria Coal Co., Cleveland, O.

ELM GROVE COAL CO.

Elm Grove mine, shaft; Pittsburgh No. 8 Seam 4. to 5 ft. thick.
PO—Elm Grove, W. Va. SP—Same. CTY—Ohio. RR—B. & O.
PR—J. B. Chambers, Elm Grove, W. Va.
GM—J. B. Chambers, Elm Grove, W. Va.
PA—J. B. Chambers, Elm Grove, W. Va.
TR—W. R. Chambers, Elm Grove, W. Va.
MS—A. Eikey.....Elm Grove, W.Va.
EE—A. Eikey.
SCO—Elm Grove Store Co. Buyer, H. A. Glitsch, Elm Grove, W. Va.
S of H—1 Electric loco.
S of M—4 Electric machines.
PP—2 Return Tubular Boilers, total 60 H. P.; purchase power.
EMP—50. Last fiscal year output, 40,000 tons.

ELMO MINING CO. (THE)

Elmo Mine, Drift, Sewell Seam, 8 ft. thick.
PO—Elmo, W. Va., SP—Same; CTY—Fayette. RR—C. & O.
PR—G. F. Groff.....Elmo, W.Va.
TR—G. F. Groff, " "
PA—G. F. Groff, " "
EM—S. H. Bridge, Quinnimont, W Va.
MF—John Dower.....Elmo, W.Va
SCO—The Elmo Mining Co., Elmo, W. Va.
S of H—Mules and 1 Elec. loco Track gauge 36 inches.
S of M—4 Elec. mach.
PP—4 Water tube boilers, total 500 H. P. 1 Gen. unit 250 volts D. C.
EMP—55. Sales agents, West Va. Coal Co. Richmond, Va.

EMORY RUN COAL CO.

(O. D. Harris & Son, Lessee).
General Office, Cumberland, Md.
Emory Run, No. 2 Mine; Slope; Seam 28 to 39 in. thick.
PO—Elk Garden, W. Va.; SP—Emory Run Sdg., Emoryville, W. Va.; CTY—Mineral; RR—W. Md., Elk Garden Branch.
PR—Dr. R. Gerstell, ..Keyser, W.Va.
TR—F. S. Deekins, Cumberland, Md.
GM—G. C. Macfarlane, Barnum, W.Va.
GS—O. D. Harris, Elk Garden, W.Va.
PA—O. D. Harris, " " "
S of H—Mules.
S of M—Hand.
PP—1 Pump.
EMP—10.

EMPIRE COAL & COKE CO.

Empire Mine, Drift, No. 3 Pocahontas Seam, 6 ft. thick.
PO—Landgraff, W. Va. SP—East Vivian, W. Va., CTY—McDowell. RR—N. & W.
PR—Frank E. Randall, 60 Wall St. N. Y.
TR—Wm. C. Atwater, 1 Broadway, N. Y.
GM—Wm. D. Ord, Landgraff, W. Va.
GS—Wm. D. Ord.....Landgraff, W.Va.
MS—D. W. Farquharson, Landgraff, W. Va.
EM—C. B. Smith, Landgraff, V.Wa.
MM—Chas. H. Tyler, Landgraff, W Va.
EE—Chas. H. Tyler, Landgraff, W. Va.
SM—W. L. Alexander, Landgraff, W. Va.
S of H—Mules and 3 Elec. loco.; track gauge 44 in.
S of M—Hand
PP—3 Water tube boilers, total 450 H. P. 2 Gen. units, 250 volts D. C., 1 compressor, 3 pumps.
EMP—350 250 Bee Hive coke ovens. Last fiscal year output 238,500 tons
Sales Agent, Wm. C. Atwater & Co., Broadway, N. Y.

ENNIS COAL CO.

Hiawatha Mine, Drift, Poca No. 3 Seam, 60 in. thick.
PO—Hiawatha, W. Va.; SP—Same; CTY—Mercer; RR—N. & W.
PR—Edw. J. McQuail..Hiawatha, W.Va.
TR—J. A. McQuail, " "
MS—J. P. Johnson, " "
EM—R. T. Wright, " "
SCO—Address the Company, " "
S of H—Elec. loco.; track gauge 48½ in.
S of M—Elec. mach.
PP—3 Erie Water tube boilers, total 450 H. P. ,2 gen. units 250 volts D. C.
EMP—190. Last fiscal year output 113,900 tons.
Successors to the Hiawatha Coal & Coke Co.

EMPIRE COAL MINING CO.

Empire Mine.
PO—Belington, W. Va.; CTY—Barbour. No report.

EPHRAIM CREEK COAL & COKE CO.

General Office, 11 Broadway, New York, N. Y.
Buffalo and Slater Mines, Drifts.
Fire Creek Seam, 3½ to 4 ft. thick.
PO—Thayer, W. Va. SP—Same. CTY—Fayette. RR—C. & O., Main Line.
PR—A. A. Houghton, Corning N. Y.
TR—M. C. Jones, New York, N. Y.
GM—M. C. Jones, New York, N. Y.
PA—M. C. Jones, New York, N. Y.
GS—Wm. Warner, Thayer, W. Va.
EE—T. C. Harmon, Thayer, W. Va.
EM—Philip Konrad, Kanawha Falls, W. Va.
SCO—Ephraim Creek Coal & Coke Co., buyer, P. V. Twohig, Thayer, W. Va.
S of H—9 Elec. loco.; track gauge 44 in.
S of M—5 Elec. machines and hand mining.
PP—5 Water tube boilers, total 750 H. P., 3 gen. units 550 volts D. C. 2 pumps.
EMP—225. Last fiscal year output 140,000 tons.
Sales Agents, C. & O. Coal Co., Boston, Mass.

ETHEL COAL CO., (THE)

Ethel Mine, Drift, Seam 5½ ft. thick.
PO—Ethel, W. Va.; SP—Same; CTY—Logan. RR—C. & O., Guyan Valley branch.
PR—Harry Bowen, Bramwell, W. Va.
TR—J. C. Pack, Bramwell, W. Va.
GM—L. Epperly, Ethel, W. Va.
PA—L. Epperly, Ethel, W. Va.
EM—J. D. Martin.....Logan, W.Va.
SM—W. P. Dean, Ethel, W. Va.
S of H—Mules and 2 elec. loco. Track gauge 44 in.
S of M—7 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P. 1 Gen. unit 250 volts D. C. 4 pumps.
EMP—225. Last fiscal year output 241,000 tons.
Sales Agency, Smokeless Fuel Co.

EUREKA COAL & COKE CO.

Eureka Mine, Drift, Pocahontas No. 3 Seam, 7 to 8 ft. thick.
PO—Eckman, W. Va., SP—Same, CTY—McDowell. RR—N. & W.
PR—L. E. Tierney.....Powhatan, W.Va.
TR—R. H. T. Adams, Jr., Lynchburg, Va.
GM—L. E. Tierney, Powhatan, W. Va.
GS—T. W. Chambers....Eckman, W.Va.
PA—T. W. Chambers....Eckman, W.Va.
EM—G. H. Wilcox, Kyle, W. Va.
SCO—Eureka Coal & Coke Co. Buyer, P. E. Sleet, Powhatan, W. Va.
S of H—Mules and 3 steam loco. Track gauge 44 in.
S of M—Hand.
PP—4 boilers, 480 H. P.
EMP—275. Last fiscal year output, 240,000 tons. 200 Bee Hive coke ovens. Sales agents, Crozier-Pocahontas Co., Philadelphia, Pa.

EUREKA COAL CO.

General Office, Athens, Ohio.
Eureka Nos. 1, 2, 3 and 4, Slope and drift, No. 2 Gas, Winifrede, and No. 5 Block Seam, 4½ to 9 ft. thick.
PO—Donwood, W. Va. SP—Montgomery, W. Va., CTY—Kanawha RR—C. & O.
PR—C. D. Hopkins, Athens, Ohio.
TR—C. D. Hopkins, Athens, Ohio.
GM—C. D. Hopkins, Athens, Ohio.
GS—Martin Welch.....Donwood, W.Va.
SM—Ray Young.....Donwood, W.Va.
EM—J. H. Jackson...Montgomery, W.Va.
S of H—Mules, rope and 5 elec. loco. Track gauge 42 in.
S of M—8 Electric machines.
PP—3 Return tubular boilers, total, 300 H. P. 250 volts D. C. 3 pumps.
EMP—180

EVANS COAL CO.

Evans Mine; Stripping; Seam 38 in. thick.
PO—Lex, W.Va.; SP—Same; CTY—McDowell; RR—N. & W., Dry Fork Branch.
TR—E. M. Evans, Lex, W.Va
EM—E. M. Evans, " "
PA—E. M. Evans, " "
MS—H. W. Evans, " "
MM—Perry Jones, " "
SCO—Elizabeth Evans, " "
CE—West & Cooper, ...Welch, W.Va.
S of H—Mules, track gauge 42 in.
S of M—Hand.
EMP—40. Output from October 1, 4,000 tons.
Sales Agency, J. W. Ryder, Kalamazoo Mich.
Successors to Central West Poca. Coal Co.

EVANS & SONS.

Great Kanawha Mine, Drift, Eagle No. 1 and 2 gas Seams, 4 ft. 4 in. thick.
PO—Mt. Carbon, W. Va. SP—Same. CTY—Fayette. RR—C. & O.
PR—Zach Evans, Mt. Carbon, W. Va.
TR—Earl Evans, Mt. Carbon, W. Va.
GM—Zach Evans, Mt. Carbon, W. Va.
GS—Zach Evans, Mt. Carbon, W. Va.
PA—Harry Evans, Mt. Carbon, W. Va.
SM—Harry Evans, Mt. Carbon, W. Va.
S of H—Motor; track gauge 36 in
S of M—1 Elec. mach.
PP—2 boilers, total 220 H. P.
EMP—22. Last fiscal year output 15,000 tons.
Sales Agency, C. & O. Coal & Coke Co.

EXCELSIOR POCAHONTAS COAL CO.

No. 138 Excelsior Mine; Drift, War Creek Seam, 54 to 72 in. thick.
PO—Excelsior, W. Va.; SP—Same; CTY—McDowell RR—N. & W., Dry Fork Br.
PR—J. A. Huddleston..Excelsior, W.Va.
GM—J. A. Huddleston, " "
PA—W. T. Vass, " "
MM—C. A. Holland, " "
EE—J. M. Johnson, " "
MS—E. C. Lambert, " "
TR—W. W. Whyte.....Welch, W.Va.
GS—H. M. Bertolett..Charleston, W.Va.
CE—G. S. Borden, " "
EM—John Baily.....Berwind, W. Va.
SCO—Address the Company, Excelsior, W.Va.
S of H—5 Elec. loco.; track gauge 44 in.
S of M—6 Elec. mach.
PP—2 Water tube boilers, 1 return tubular boiler, total 550 H. P., 2 gen. units 250 volts D. C.; 1 compressor.
EMP—210. Last fiscal year output 165,000 tons.
Sales Agency, Logan—Pocahontas Fuel Co., Charleston, W. Va.

EXPORT COAL CO.

Export Mine, Drift, "Fire Creek" Seam, 2 ft to 5 ft thick.
PO—Export, W. Va., SP—Same; CTY—Fayette. RR—C. & O., Laurel Creek Branch.
PR—J. E. Beury, MacDonald, W. Va.
TR—J. E. Beury, " " "
GM—J. E. Beury, " " "
GS—H. B. Clarkson, Thayer, W. Va.
PA—C. P. Morris, Jr., Export, W. Va
S of H—Mules and 1 Electric Locomotive. Track gauge, 44 in.
S of M—Hand.
PP—1 boiler, 1 gen. unit, 500 volts A. C. and 2 pumps.
EMP—50 to 60. Last fiscal year Output 32,000 tons.
Sales Agency, New River Coal Co.

EXTRAPOCA COAL CO.

Extrapoca Mine; Drift, Poca. No. 3 Seam, 96 to 108 in. thick.
PO—Bramwell, W. Va.; SP—Switchback, W. Va.; (Prepay) CTY—Mercer; RR—N. & W., Delta Br.
PR—Chas. W. Freeman, Bramwell, W.Va.
TR—H. S. Brown, " "
GM—J. E. Biggs, " "
CE—D. C. Jones, " "
MS—J. R. Meadwell..Switchback, W.Va.
S of H—Mules; track gauge 44 in.
S of M—Hand.
EMP—20-30. Annual output to be 30,000 tons.
Sales Agency, West Virginia Coal Co., Richmond, Va.

FAIRMONT & BALTIMORE COAL & COKE CO.

Fairmont Mine, Drift, Pgh. Seam 6½ ft. thick.
PO—Adamston, W. Va.; SP—Same; CTY Harrison. RR—B. & O.
PR—A. P. Adams, ... Baltimore, Md.
VP—Howard Adams, " "
TR—Irving Adams, " "
GM—A. L. White....Adamston, W.Va.
PA—A. L. White, " "
MS—A. L. White, " "
CE—A. L. White, " "
MM—C. C. Price, " "
EE—C. C. Price, " "
EM—Horner Bros.....Clarksburg, W.Va.

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FAIRMONT & BALTIMORE COAL & COKE CO.—Continued.
SCO—Fairmore Store, Buyer, W. C. Sullivan, Adamston, W. Va.
S of H—Mules, 1 steam loco., rope; track gauge 40 in.
S of M—Hand and 2 elec. machines.
PP—Erie return tubular boiler, total 150 H. P., 650 volts, D. C., elec. power purchased.
EMP—150. Coke ovens, 30. (Not in use). Last fiscal year output, 80,000 tons.
Sales Agent, S. M. Hamilton Coal Co., Baltimore, Md.

FAIRMONT & CLARKSBURG COAL CO.
General Office, Fairmont, W.Va.
Phoenix Mine; Slope; Pittsburgh, Seam 66 to 84 in. thick.
PO—Reynoldsville, W.Va.; SP—Same; CTY—Harrison; RR—B. & O.
PR—J. M. Orr, Reynoldsville, W.Va.
MS—J. M. Orr, " "
MM—George Wolf, " "
TR—John Y. Hite, Fairmont, W.Va.
PA—John Y. Hite, " "
EM—Sidney Britt, Clarksburg, W.Va.
S of H—Mules and rope; track gauge 42 in.
S of M—7 Comp. air mach.
PP—2 Erie City return tubular boilers, total 150 H.P., 1 compressor, 2 pumps.
EMP—60. Last fiscal year output 50,000 tons.
Formerly the Shield Coal Co.

FAIRMONT & CLEVELAND COAL CO.
General Office, Fairmont, W. Va.
Parker Run Mine; Drift, Sewickley Seam, 72 to 78 in. thick.
PO—So. Riversville, W. Va.; SP—Same; CTY—Marion; RR—B. & O., B. & N.
EM—G. B. Hartley, Fairmont, W. Va.
TR—J. F. Straight, " "
GM—W. E. Watson, Jr., " "
PA—W. E. Watson, Jr., " "
MS—C. E. Gaskill....Rivesville, W.Va.
CE—W. B. Hanlon.....Cleveland, O.
SCO—Rivesville Supply Co., Rivesville, W. Va.
S of H—1 Elec., 1 gasoline loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—3 Pumps. Purchase power.
EMP—115. Last fiscal year output 126,185 tons.
Sales Agency, Rosebud Fuel Co., Fairmont, W. Va.

FAYETTE COAL CO.
Out of business.

FAYETTE COAL & COKE CO.
General Office Charleston, W. Va.
Fayette Mine, Drift, Sewell Seam, 3 ft. thick.
PO—Fayette, W. Va., SP—Same; CTY—Fayette. RR—C. & O.
PR—Thos. C. Beury, Charleston, W. Va.
TR—J. W. Lester, Boston, Mass.
GM—E. G. Blume, Fayette, W. Va.
GS—E. G. Blume, Fayette, W. Va.
PA—E. G. Blume, Fayette, W. Va.
S of H—Mules and 1 elec. loco. Track gauge 30 in.
S of M—Hand, and 2 elec. machines.
PP—1 Return tubular 150 H. P. boiler, 1 Gen. unit 250 volts D. C.
EMP—50. Last fiscal year output, 25,000 tons. Sales Agency, C. & O. Coal Agency Co.

FEDERAL COAL & COKE CO
General Office, 111 Devonshire Street, Boston, Mass.
Federal Mine, Shaft, Pittsburgh Seam, 72 to 120 in. thick.
PO—Grant Town, W. Va. SP—Same CTY—Marion; RR—B. & O., Paw Paw Branch.
PR—J. L. Richards.....Boston, Mass.
TR—R. Grant, Boston, Mass.
CE—T. W. Sprague, Boston, Mass.
MS—J. W. Devison, Grant Town, W. Va.
PA—A. W. Herstine, Grant Town, W. Va.
EM—C. A. Phillippi, Grant Town, W. Va.
MM—A. D. Hudon, Grant Town, W. Va.
EE—W. J. Hines, Grant Town, W. Va.
SCO—Federal Coal & Coke Co. Buyer, H. A. Fultz, Grant Town, W. Va.
S of H—Horses, 10 Comp. air and 4 Elec loco.; track gauge 42 in.
S of M—Hand and 34 Comp. air mach.
PP—4 Wickes and 2 Rust Water tube boilers, total 2200 H. P., 2 gen. units, 250 volts D. C., 2 compressors, and 1 pump.
EMP—500 Coke ovens, 60 Bee Hive. Last fiscal year output 616,000 tons.

FIRE CREEK COAL & COKE CO.
General Office, Staunton, Va.
Fire Creek Mine, Drift, Fire Creek Seam.
PO—Fire Creek, W. Va. SP—Same. CTY—Fayette. RR—C. & O.
PR—H. R. Sproul.....Staunton, Va.
GM—H. H. Blackburn. Fire Creek, W. Va
EM—H. H. Blackburn, " "
MS—Charles Watters, " "
SM—W. B. Writlock..Fire Creek, W.Va.
S of H—Rope, mules and elec. loco.
S of M—Hand.
PP—1 gen. unit, 500 volts D. C., 3 boilers, total 400 H. P.
EMP—105.
Coke ovens—72.

FISCHER HARVEY.
Alum Rocks Mine; Drift; Pgh. Seam, 108 to 120 in. thick.
PO—Morgantown, W. Va.; CTY—Monongalia; RR—Buckhannon & Northern.
GM—Harvey Fischer, Morgantown, W. Va.
CE—G. B. Hartley, Morgantown, W. Va.
S of H—Mules and gravity; track gauge, 42 in.
S of M—Hand.

FLANAGAN COAL CO.
General Office, Shenandoah, Pa.
Flanagan Nos. 1 and 2 Mines; Drifts; War Creek and Davy Seams, 48 to 72 in. thick.
PO—Roderfield, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., Spice Creek Br.
PR—J. H. Manley....Shenandoah, Pa.
GM—J. H. Manley, " "
TR—A. D. Gable, " "
MS—John F. Butler....Roderfield, W.Va.
EM—A. A. Gallagher, " "
S of H—Mules; track gauge 48 in.
S of M—1 Elec. mach.
PP—Power purchased.
EMP—42.

FLAT TOP COAL MINING CO.
General Office, Bramwell, W. Va.
Flat Top Mine, Slope, Pocahontas Seam, 3½ ft. thick.
PO—English, W. Va. SP—Same. CTY—McDowell; RR—N. & W.
PR—W. H. Thomas.....Bramwell, W.Va.
TR—W. H. Thomas, Bramwell, W. Va.
GM—W. H. Thomas, Bramwell, W. Va.
MS—Jas. Grainger.....English, W.Va.
S of H—1 Elec. loco. and rope. Track gauge 48 in.
S of M—1 Elec. mach. and hand.
PP—Gen. units, 220 volts A. C. and D. C., 3 phases and 60 cycles, power purchased.
EMP—100. Last fiscal year output, 50,000 tons.

FORT BRANCH COAL CORP.
General Office, Richmond, Va.
Fort Branch Mine; Drift Winifrede Seam, 4 to 6 ft. thick.
PO—Fort Branch, W. Va. SP—Same. CTY—Logan; RR—C. & O., Guyan Valley Branch.
PR—John W. Williams, Richmond, Va.
VP—Frederick E. Nolting, Richmond, Va.
TR—Geo. M. Reid, ... Richmond, Va.
GM—Geo. M. Reid, Richmond, Va.
PA—Geo. M. Reid, Richmond, Va.
MS—A. E. Thomas....Ft. Branch, W.Va.
SM—E. D. Wells, " "
SCO—Buyer, James Somers, Fort Branch, W. Va.
S of H—2 Elec. and 1 Gas. loco.; track gauge 44 in.
S of M—3 Elec. Machines.
PP—2 Boilers, total 350 H. P. 1 Gen. unit 250 volts.
EMP—100. Last fiscal year output, 65,000 tons. Sales Agent, Fort Branch Coal Corp., Richmond, Va.

FORT DEFIANCE COAL & COKE CO.
Drift Mine, No. 2 Gas Seam, 52 to 60 in. thick.
PO—Fort Defiance, W.Va.; SP—Kanawha Falls, W. Va.; CTY— Fayette; RR—C. & O.
PR—W. A. Miller, Gauley Bridge, W.Va.
TR—F. H. Miller, " "
GM—G. J. Cottrell, Fort Defiance, W.Va.
GS—G. J. Cottrell, " "
PA—G. J. Cottrell, " "
MS—G. J. Cottrell, " "
EM—Philip Konrad, Kanawha Falls, W. Va.
S of H—1 Elec. loco. and mules track gauge 42 in.
S of M—5 Comp. air mach.
PP—1 Water tube boilers, 150 H.P., gen. units 250 volts D. C.
EMP—85. Last fiscal year output 56,034 tons.
Sales Agency, Eastern Coal & Export Corp., Richmond, Va.

FORTUNE HUNTER COAL CO.
Fortune Hunter Mine.
PO—Northfork, W. Va., CTY—McDowell
PR—Wm. J. Beury, Algoma, W. Va.
TR—A. H. Parker, Northfork, W. Va.
GM—G. H. Wilcox, Kyle, W. Va.
EM—G. H. Wilcox, Kyle, W. Va.

FOUR STATES COAL & COKE CO.
General Office, Pittsburgh, Pa.
PR—John H. Jones.....Canonsburg, Pa.
GM—A. C. Beeson, " "
TR—Wm. Parkin .....Pittsburgh, Pa.
PA—M. F. McDermott, " "
CE—A. C. Beeson....Canonsburg, Pa.
MM—Mr. Snapp..Worthington, W.Va.
EE—Frank Buckley....Dorothy, W.Va.
SCO—Big Supply Co., Dorothy, W. Va., and Worthington, W. Va. Buyer, Mr. Gregg, Pittsburgh, Pa.
Sales agency, Pittsburgh-Buffalo Co., Frick Bldg., Pittsburgh, Pa.

Dorothy and Sarita Mines, Drift, Dorothy Seam, 9 to 20 ft. thick.
PO—Dorothy, W. Va. SP—Same. CTY Raleigh. RR—C. & O., Cabin Creek Branch of Coal River.
MS—Chas. E. Sandberg..Dorothy, W.Va
S of H—12 elec. loco. Track gauge 42 in.
S of M—12 elec. mach.
PP—6 Erie City return tubular boilers, total 900 H. P., 4 gen. units, 250 volts D. C., 2 elec. pumps.
EMP—150. Last fiscal year output 400,000 tons.

Annabelle Mine, Shaft, Pgh. or River Seam, 8 ft. thick.
PO—Worthington, W. Va. SP—Same. CTY—Marion. RR—B. & O., Monon. River Div.
MS—W. J. Wolfe....Worthington, W.Va.
S of H—14 comp. air loco. Track gauge 48 in.
S of M—23 comp. air mach.
PP—Water tube boilers, total 1,500 H. P., 2 low and 2 high comp.
EMP—250. Last fiscal year output. 600,000 tons.

FRANCOIS COAL & COKE CO.
Norwood Mine; Slope, Pgh. Seam, 84 to 108 in. thick.
PO—Clarksburg, W. Va.; SP—Same; CTY—Harrison; RR—B. & O.
PR—J. M. Francois...Clarksburg, W.Va.
TR—E. J. Francois, " "
GM—V. E. Gocke, " "
PA—V. E. Gocke, " "
GS—Wm. McOlvin, " "
CE—Hornor Bros., " "
S of H—2 Elec., 1 gasoline loco.; track gauge 42 in.
S of M—2 Elec. mach.
PP—1 pump. Power purchased.
EMP—75. Last fiscal year output 65,000 tons.

FRIEZE FORK COAL MINING CO.
General Office, Detroit, Mich.
Frieze Mine; Draft, Winifrede Seam, 42 to 60 in. thick.
PO—Ethel, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Guyan Br.
PR—John J. Kean, Detroit, Mich.
TR—John F. Noud, South Haven, Mich.
GM—John F. Noud, " "
PA—C. W. Sanders.....Ethel, W.Va.
MS—C. W. Sanders, " "
SCO—Address the Company, " "
CE—W. G. Wilkins Co.....Logan, W.Va.
S of H—2 Elec. loco.
S of M—2 Elec. mach.
EMP—40-50. Last fiscal year output 31,283 tons.
Sales Agency, Address the Company, Detroit, Mich.

GAGE COAL & COKE CO.
General Office, Oliver Bldg., Pittsburgh, Pa.
Sarah Mine; Drift, L. Freeport Seam, 60 to 72 in. thick.
PO—Junior, W. Va.; SP—Gage, W. Va.; CTY—Barbour; RR—W. Md., B. & O.
PR—W. D. Henry.....Pittsburgh, Pa.
TR—A. M. Diehl, " "
GM—Charles S. Bygate, " "
PA—C. W. Shoner.....Junior, W. Va.
SCO—Gage Supply Co., " "
S of H—1 Elec. loco. and mules.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., gen. units 250 volts D. C.
EMP—60. Coke ovens 60 Bee Hive.
Last fiscal year output 40,000 tons.
Sales Agency, Theiss-Bygate Co., Pittsburgh, Pa.

GAMOCA COAL CO.
Sold to Midvale Colliery.

GATZMER COAL & COKE CO.
PO—Dobbin, W. Va. Closed indefinitely.

GAULEY MOUNTAIN COAL CO. (THE)
General Office, Ansted, W. Va.
PR—Wm. N. Page....Ansted, W. Va.
TR—Chas. E. Hewitt, 50 Church St., New York, N. Y.
GM—R. C. Taylor....Ansted, W.Va.
EM—A. O. Hogue, " "
MM—E. L. Morris, " "
EE—E. L. Morris, " "
PA—E. L. Morris.....Jodie, W.Va.
Sales agent, Smokeless Fuel Co., No. 1 Broadway, New York, N. Y.
Ansted Mine, Drift, No. 2 Gas Seam.
PO—Ansted, W. Va. SP—Same. CTY—Fayette. RR—C. & O., Hawks Nest Branch.
MS—James A. Martin..Ansted, W.Va.
S of H—12 elec. locos.
S of M—5 elec. and 21 comp. air mach.
PP—7 Erie City boilers, 2 gen. units, 550 volts D. C.
EMP—400. Last fiscal year output 200,000 tons.
Coke ovens—152 Bee Hive.

Rich Creek Mine, Drift, No. 2 Gas Seam
PO—Jodie, W. Va. SP—Price. CTY Fayette. RR—C. & O. Gauley Branch.
MS—Jesse Blake .....Jodie, W.Va.
S of H—2 elec. locos.
S of M—5 elec. mach.
PP—1 Sterling water tube boiler, 1 gen. unit, 550 volts.

GAY COAL & COKE CO. (THE)
Gay Mine, Drift, Island Creek No. 2 Gas Seam, 68 to 72 in. thick.
PO—Logan, W. Va.; SP—Gay Mines, W. Va.; CTY—Logan; RR—C. & O., Island Creek Br.
PR—Geo. W. Robertson..Shamokin, Pa.
TR—C. K. Robertson, " "
GM—H. S. Gay.....Logan, W.Va.
GS—H. S. Gay, Jr., " "
PA—H. S. Gay, Jr., " "
MS—H. S. Gay, Jr., " "
EE—D. Musick, " "
EM—W. G. Wilkins Co., " "
S of H—2 Elec., 1 steam loco. and mules; track gauge 32 in.
S of M—6 Elec. mach.
PP—1 Return tubular boilers, 150 H. P., gen. units 275 volts D. C.
EMP—130. Last fiscal year output 159,650 tons.
Sales Agency, Jewett, Gigelow & Brooks, Detroit, Mich.

GAYMONT COAL CO.
General Office, Charleston, W. Va.
Gaymont Mine; Drift, Sewell Seam, 34 in. thick.
PO—Elmo, W. Va.; SP—Same and Hawk's Nest, W. Va.; CTY—Fayette; RR—C. & O.
PR—Thos. C. Beury..Charleston, W.Va.
GM—Thos. C. Beury, " "
TR—John P. Vaughan, " "
S of H—Mules.
S of M—Hand.
EMP—10.
Sales Agency, West Virginia Coal Co., Richland, Va.

GEORGES CREEK COAL CO.
General Office, Cumberland, Md.
Drift Mine, Winifrede Seam, 42 to 110 in. thick.
PO—Ethel, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Guyan Valley Br.
PR—Harry E. Weber, Cumberland, W.Va.
TR—Robert L. Stallings, " "
GM—W. F. Coale, " "
GS—John R. Hamilton..Lonaconing, Md.
PA—John R. Hamilton, " "
CE—Frank Green, " "
EM—Robert Gunning.....Ethel, W.Va.
MS—Robert Gunning, " "
MM—Thos. Ritchie, " "
EE—Thos. Ritchie, " "
SCO—Address he Company, " "
S of H—1 Elec. loco. and mules; track gauge 44 in.
S of M—3 Elec. mach.
PP—1 Return tubular boilers, gen. unit 550 volts D. C., 1 pump.
EMP—100. Last fiscal year output 80,000 tons.

GILLIAM COAL & COKE CO.
Gilliam Mine, Drift, No. 3 Pocahontas Seam, 6 ft. thick.
PO—Gilliam, W. Va. SP—Northfork, W. Va.; CTY—McDowell.; RR—N. & W., Northfork Branch.
PR—Jas. R. Gilliam.....Lynchburg, Va.
TR—D. A. Payne, " "
GM—Morris Watts, Eckman, W. Va.
EM—T. A. Mitchell, Eckman, W. Va.
EE—G. H. Finks, Gilliam, W. Va.
SM—G. W. Jones, Gilliam, W. Va.
S of H—5 Elec. loco.
S of M—1 Elec mach.
EMP—270 Coke ovens, 217 Bee Hive.

GILMER CONSOLIDATED COAL CO.
General Office, Gilmer, W. Va.
PR—Louis Bennett, Weston, W. Va.
TR—F. Earnest Brackett, Cumberland, Md.
GM—W. G. Colborn, Gilmer, W. Va.
GS—D. D. Hennings, " " "
PA—N. J. Amick, " " "

Continued on Next Page.

CE—G. J. Alstetter, Clarksburg, W. Va.
EM—G. J. Alstetter, " "
Brackett and Katherine Mines, Slopes, Pittsburgh No. 8 Seam 5 to 7 ft. thick.
PO—Gilmer, W. Va., SP—Same, CTY—Gilmer. RR—C. & C., Gilmer, W. Va.
GS—D. D. Hennings....Gilmer, W.Va.
SM—N. J. Amick, Gilmer, W. Va.
S of H—Mules.
S of M—2 Elec. machines.
PP—1 Gen. unit 250 volts D. C. Buy power.
EMP—35. Last fiscal year output 40,000 tons.
Braxton Mine, Drift, Pittsburgh Seam No. 8, 5 to 9 ft. thick.
PO—Braxton, W. Va. SP—Cutlip Siding, W. Va., CTY—Gilmer. RR—C. & C. Braxton, W. Va.
GS—F. Murphy.
SM—C. E. Crosby, Braxton, W. Va.
S of H—Mules.
S of M—3 elec. machines.
EMP—30. Last fiscal year output, 48,000 tons.

GILMER FUEL CO.
General Office, Cincinnati, O.
Drift Mine, Pgh. Seam, 84 in. thick.
PO—Gilmer, W. Va.; SP—Same; CTY—Gilmer; RR—C. & C.
PR—D. H. Gayle.....Cincinnati, O.
GM—D. H. Gayle, " "
TR—R. J. Kroger, " "
PA—H. B. Graham.....Gilmer, W.Va.
SM—H. B. Graham, " "
MS—W. Mathena, " "
CE—A. J. Alstetter..Clarksburg, W.Va.
S of H—Mules.
S of M—8 Comp. air mach.
PP—2 Boilers, total 300 H. P.; 1 compressor.
EMP—80. Last fiscal year output 100,000 tons.
Sales Agency, Kroger-Gayle Coal Co., Cincinnati, O.

GLEASON COAL & COKE CO.
General Office, Frostburg, Md.
Gleason No. 1 Mine, Drift, Lower Kittanning Seam, 6 to 7½ ft. thick.
PO—Gleason, W. Va., SP—Same; CTY—Mineral RR— Western Maryland, W. Va. Div.
PR—Philip Brown .... Frostburg, Md.
TR—James A. Brown, " "
GM—Philip Brown, " "
GS—Philip Brown, " "
PA—James A. Brown, " "
CE—William Harvey, " "
EM—William Harvey, " "
MM—Samuel Whorrel, Gleason, W. Va.
EE—Samuel Whorrel, " " "
MS—Joseph F. Brown, " " "
SCO—Gleason Supply Co. Buyer, E. A. Healy, Gleason, W. Va.
S of H—Mules and 2 elec. loco. Track gauge 42 in.
S of M—3 Elec. machines.
PP—2 Erie City return tubular boilers, total 175 H. P. 2 Gen. units, 250 volts D. C., 2 pumps.
EMP—85. Last fiscal year output, 56,913 tons. Sales manager, Philip Brown.

GLEN ALUM COAL CO.
Mines Nos. 1, 2, 3 and no plant. Drifts.
PO—Glen Alum, W. Va. SP—Same. (Prepay) CTY—Mingo. RR—N. & W.
PR—J. R. Gilliam..Glen Alum, W.Va.
TR—D. A. Payne, " " "
GM—Morris Watts, " " "
PA—W. A. Fink, " " "
CE—D. T. Mitchell, " "
EE—W. B. Harrison, " "
SM—J. T. Ward, " "
S of H—Elec. loco.
S of M—Elec. Machines.
PP—6 boilers, total 900 H. P., and gen. units 250 volts D. C., 2200 A. C., 3 phase, 60 cycles.
EMP—450. Last fiscal year output 355,342 tons.
Sales Agent, Glen Alum Fuel Co.

GLENDALE COAL CO.
Glendale Mine, Shaft, Pittsburgh No. 8 Seam, 5 ft. 8 in. thick.
PO—Glendale, W. Va. SP—Same. CTY—Marshall, RR—B. & O.
EM—H. Meisky.....Wheeling, W. Va.
PR—E. T. Hitchman, " " "
TR—W. H. Koch, .. Glendale, W. Va.
GM—W. H. Koch, " " "
PA—W. H. Koch, " " "
GS—E. C. Pickett, " " "
MM—T. I. Thomas, " " "
SCO—Western Supply Co. Glendale, W. Va.
S of H—Mules; 1 elec. loco. Track gauge, 35 in.
S of M—6 Elec. machines.
PP—3 Phoenix and Erie return tubular boilers, total 450 H. P. 3 Gen. units, 250 volts D. C.
EMP—150. Last fiscal year output, 88,907 tons. Sales agents, E. A. Upstill & Co., Cleveland, Ohio.

GLENDALE COLLIERY CO.
Glendale Mine, Drift, New River Red Ash, Fire Creek Seams, 4 ft. thick.
PO—Lawton, W. Va. SP—Glendale, W. Va. CTY—Fayette. RR—C. & O. Laurel Creek Branch.
PR—C. C. Beury, Claremont, W. Va.
TR—C. C. Beury, " " "
GM—C. B. Helwig, ..Lawton, W. Va.
GS—C. B. Helwig, " " "
PA—C. B. Helwig, " " "
EM—S. H. Bridge, Quinnimont, W. Va.
CE—J. M. Clark, Charleston, W. Va.
MM—S. F. Goms, Backus, W. Va.
SCO—Glendale Store. Buyer, L. W. Collon, Lawton, W. Va.
S of H—Mules, 1 steam loco. and 1 gasoline motor. Track gauge 44 inches.
S of M—Hand.
EMP—65. Last fiscal year output, 50,000 tons. Sales agents, New River Con. C. & C. CO.

GODFREY COAL CO.
Cephus Mine, Drift, Poca. No. 3 Seam.
PO—Montcalm, W. Va.; SP—Godfrey, W. Va.; CTY—Mercer; RR—N. & W.; Cane Creek Br.
PR—H. A. Ritz.....Bluefield, W.Va.
TR—C. N. Williams, Jr..Richmond, Va.
GM—C. N. Williams, Jr., " "
MS—E. V. Neal....Montcalm, W. Va.
S of H—Mules.
S of M—Hand.
EMP—30.
Sales Agency, Castner, Curran & Bullitt.

GORMAN COAL & COKE CO.
General Office, Baltimore, Md.
Gorman Nos. 1 and 2 Mines, Drifts, Upper Freeport Seam, 4 to 5½ ft. thick.
PO—Austen, W. Va. SP—Same. CTY—Preston. RR—B. & O.
PR—William H. Gorman, Baltimore, Md.
TR—J. W. McMillan, Baltimore, Md.
GM—Douglas Gorman, Baltimore, Md.
PA—Douglas Gorman, Baltimore, Md.
EM—J. A. Smith, Albert, W. Va.
MS—Thos. Murphy, Austen, W. Va.
SCO—West End Supply Co., Austen, W. Va. Buyer,, Leo Littman, Austen, W. Va.
S of H—Mules. Track gauge, 42 in.
S of M—Hand and 4 comp. air machines.
PP—1 return tubular 150 H. P. boiler, 1 air compressor.
EMP—125. Last fiscal year output 50,000 tons. 40 Bee Hive coke ovens.

GRAFTON COAL & COKE CO.
Sandlick Mine, Drift, Pgh. Seam.
PO—Grafton, W. Va. SP—Flemington, W. Va. CTY—Taylor. RR—C. & O.
GM—E. J. Fahey ....Grafton, W.Va.
PA—E. J. Fahey, " "
EM—Thos. Daley, " "
MS—John McGraw, " "
SM—Thos. Walsh, " "
S of H—Mules.
S of M—Hand.

GRAFTON FUEL CO.
Lillian Mine; Drift; Up. Freeport Seam, 74 in. thick.
PO—Grafton, W. Va.; CTY—Barbour; RR—G. & B.
GM—L. B. Brydon....Grafton, W.Va.
S of M—3 Elec. mach.
EMP—28. Last fiscal year output, 44,778 tons.

GRAFTON MINING CO.
PO—Grafton, W. Va.; CTY—Mineral.
No report.

GRAHAM, W. W.
General Office, Charleston, W. Va.
Graham Mine, Drift, Masontown Seam, 56 to 60 in. thick.
PO—Big Chimney, W. Va. SP—Bream, W. Va. CTY—Kanawha. RR —Coal & Coke Ry.
PA—W. W. Graham, Charleston, W. Va.
EM—John S. Cole, Charleston, W. Va.
MS—Z. L. Huffam..Big Chimney, W.Va.
SM—W. W. Graham, Big Chimney, W. Va.
S of H—Mules. Track gauge 42 in.
S of M—Pick.
PP—2 Return tubular boilers, total 120 H. P., 2 pumps.
EMP—50. Last fiscal year output, 25,000 tons.

GREAT BEND COAL CO.
Out of business.

GREAT SCOTT COAL & COKE CO. (THE)
Great Scott Mine, Drift, Pittsburgh Seam, 108 in. thick.
PO—Morgantown, W. Va SP — Star City, W. Va. CTY—Monongahela. RR—B. & O., F. M. & P. Branch.
PR—Alex H. Tait, Morgantown, W. Va. Va.
TR—D. C. Hoffman, " "
GM—Alex H. Tait, " "
PA—Alex. H. Tait, " "
GS—A. Gordon Tait, " "
CE—A. Gordon Tait, " "
S of H—Mules and aerial tramway. Track gauge 42 in.
S of M—Pick.
EMP—10.

GREEN, W H.,
Williette Mine, Drift, Kittanning Seam, 8 ft. thick.
PO—Weaver, W. Va. SP—Same. CTY Randolph. RR—W. M.
PR—W. H. Green, ..Weaver, W. Va.
GM—W. H. Green, " " "
PA—W. H. Green, " " "
S of H—Mules. Track gauge 42 in.
MS—John Condry, " "
S of M—Hand.
EMP—40. Last fiscal year output 50,000 tons.

GREENBRIER COAL & COKE CO.
Greenbrier Mine, Drift; Pocahontas No. 3 Seam 5 to 6 ft. 3 in. thick. Operate Washery.
PO—McDowell, W. Va. SP—Crumpler, W. Va. CTY—McDowell. RR—N. & W., Norfolk Branch.
PR—Isaac T. Mann, Bramwell, W. Va.
TR—Jairus Collius, " " "
GM—Jairus Collins, " " "
PA—Jairus Collins, " " "
EM—W. R. Dudley, Goodwill, W. va.
MM—W. H. Saunders, McDowell, W. Va.
SM—J. E. Smith, McDowell, W. Va.
S of H—4 Elec. loco. Track gauge 56 in.
S of M—Hand and mach.
PP—3 Water tube, Erie City boilers, total 375 H. P., 3 Gen. units, 250 volts D. C., 2 pumps. Power for tipple purchased.
EMP—225. 200 Bee hive Coke Ovens. Last fiscal year output 200,000 tons. Sales agent, Smokeless Fuel Co., Cincinnati, O.

GREENWOOD COAL CO.
Greenwood Mine; Drift, Fire Creek Seam, 48 in. thick.
PO—Lawton, W. Va.; SP—Brownwood, W. Va.; CTY—Fayette; RR—C. & O.; Lauel Creek Br.
PR—George Lawton.....Lawton, W.Va.
TR—George Lawton, " "
GM—W. A. Brown, " "
GS—W. A. Brown, " "
PA—W. A. Brown, " "
MS—H. C. Peters and Beck Hurt, Lawton, W.Va.
S of H—5 Elec., 2 steam loco.
S of M—1 Elec. mach.
PP—Power purchased.
Coke ovens 50 Bee Hive.

GREY EAGLE COAL CO.
Grey Eagle Mine, Shaft, No. 2 Gas Seam, 58 to 65 in. thick.
PO—Kermit, W. Va.; SP—Grey Eagle, W. Va.; (Prepay) CTY—Mingo; RR—N. & W.
PR—S. W. Perry.....Kermit, W.Va.
GM—S. W. Perry, " "
PA—S. W. Perry, " "
TR—A. J. Perry, Jr., " "
MS—L. J. Blankenship, " "
EE—Jas. Daniels, " "
SCO—Address the Company, " "
EM—D. M. Good....Williamson, W.Va.
S of H—1 Elec. loco. and mules; track gauge 48 in.
S of M—3 Elec. mach.
PP—2 H. S. & G. return tubular boilers, total 200 H. P., 1 gen. unit 250 volts D. C., 2 pumps.
EMP—85. Last fiscal year output 47,000 tons.
Sales Agency, Blue Ash Coal Co., Cincinnati, O.

GRIFFITH COLLIERIES CO.
General Office, Scranton, Pa.
No report.

GULF COAL CO.
General Office, Tams, W. Va.
Gulf Nos. 1, 2 and 3, Drifts, Beckley Seam, 4 ft. to 6¼ ft. thick.
PO—Hotcoal, W. Va. SP—Same. CTY—Raleigh. RR—Virginia, Winding Gulf Branch.
PR—J. O. Watts.....Tams, W.Va.
TR—J. O. Watts, " "
GM—W. P. Tams, Jr., " " "
PA—W. P. Tams, Jr., " "
GS—W. H. Ruby,.. Hotcoal, W. Va.
EM—W. H. Ruby, " " "
SCO—Buyer, J. P. Kelly, Tams, W. Va.
S of H—Mules and 2 elec. loco. Track gauge 56½ and 44 in.
S of M—Hand and 2 elec. mach.
PP—2 Brownell return tubular boilers, total 300 H. P. 1 Gen. unit 250 volts D. C. 3 pumps.
EMP—75. Last fiscal year output, 122,000 tons.

GULF SMOKELESS COAL CO.
Tams Mine, Drift, Beckley Seam.
PO—Tams, W. Va. SP—Same. CTY—Raleigh. RR—Vir., C. & O.
GM—W. P. Tams, Jr...Tams, W.Va.,
PA—W. P. Tams, Jr., " "
EM—K. McWhorter, " "
MS—Adam Lindley, " "
EE—F. Vandervolgen, " "
S of H—Elec. loco.
S of M—Hand and elec. mach.
PP—2 gen. units, one 200 KW., one 300 KW., 250 volts D. C., 4 boilers, total 600 H. P.
EMP—450.

GUYAN RIVER COAL CO.
Guyan River Mine.
PO—Branchfield, W. Va.; CTY—Lincoln.
No report.

GUYANDOTTE COAL CO.
Guyandotte Mine, Drift, No. 2 Gas Seam, 44 to 60 in. thick.
PO—Kitchen, W. Va.; SP—Same, CTY—Logan; RR—C. & O., Guyan Valley Br.
PR—Captain F. T. Lee..Lynchburg, Va.
TR—Richard Hancock, "
PA—Chris MacTaggart..Kitchen, W.Va.
EM—Chris MacTaggart, " "
MS—Chris MacTaggart, " "
SCO—Address the Company, " "
S of H—1 Elec. loco. and mules; track gauge 48 in.
S of M—1 Elec., 4 comp. air mach.
PP—Return tubular boiler, 150 H. P., 1 compressor; power purchas d.
EMP—60. Last fiscal year output 41,281 tons.
Sales Agency, The John T. Hesser Co.

HACKETT COAL CO.
Hackett Mine; Drift; Seam No. 5 Block, 48 to 78 in. thick.
PO—Cedar Grove, W.Va.; SP—Same; CTY—Kanawha; RR—K. & M., Main Line.
PR—Sam'l Hackett, Cedar Grove, W.Va.
GM—Sam'l Hackett, " " "
GS—Sam'l Hackett, " " "
PA—Floyd Hackett, " " "
MS—James Martin, " " "
TR—Harold P. Tompkins, Charleston, W.Va.
EM—J. E. Settle, Fayetteville, W.Va.
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—28. Coke ovens 15 (not operating).
Sales Agent, Floyd Hackett.
Note—Output 100 tons per day, developing for 400 tons per day.
Successors to Samuel Hackett & Son.

HAMILL COAL & COKE CO.
Hamill Mine; Kittanning Seam. 54 to 60 in. thick.
PO—Blaine, W. Va. SP—Same. CTY—Mineral. RR—Western Maryland.
PR—M. M. Brown.....Blaine, W.Va.
TR—R. A. Smith, " " "
GM—R. A. Smith, " " "
GS—R. A. Smith, " " "
PA—F. G. Trout, " " "
EM—V. G. Pew, " "
SCO—Hamill Coal & Coke Co. Buyer, F. G. Trout, Blaine, W. Va.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—90. Last fiscal year optput 86,000 tons.

HALL, JOHN D.
Edgewood Mine.
PO—Edgewood, W. Va.; CTY—Ohio.
No report.

HAMILTON COAL & COKE CO.
See Virginia-Maryland Coal Corp

HARRISON COAL CO.
Smith Mine, Drift, Pgh. Seam, 7 to 8 ft. thick.
PO—Rosemont, W. Va. SP—Same. CTY—Taylor. RR—B. & O.
PR—David O. Smith.Rosemont, W. Va.
TR—R. H. Philson....Meyersdale, Pa.
GM—H. G. Smith..Rosemont, W. Va.
PA—H. G. Smith, " "
MS—H. G. Smith. " "
SM—Miss V. M. Gibson, " "
S of H—Mules and gravity. Track gauge 42 in.
S of M—Hand.
EMP—40. Last fiscal year output 18,000 tons.

HARRISON COUNTY COAL CO.
Now Overholt Coal Co.

HARRY B., COAL CO.
General Office, Fairmont, W. Va.
Harry, Junior Mines, Nos. 2, 3 and 4, Drifts, Pittsburgh Seam, 7 ft. thick.
PO—Monongah, R. F. D. No. 3. SP—Everson. W. Va., (Prepay). CTY—Marion RR—Kilarm Branch, B. & O.

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HARRY B. COAL CO.—Continued.
PR—Harry B. Clark, Fairmont, W. Va.
TR—C. H. Waggener, " " "
SEC—C. H. Waggener, " " "
GM—Harry B. Clark, " " "
GS—J. A. Clark, Jr., " " "
PA—J. A. Clark, Jr. " " "
SCO—Everson Supply Co., Monogah, W.Va.
S of H—Mules.
S of M—Hand.
EMP—90.

HARRY B COAL & COKE CO.
General Office, Fairmont, W. Va.
Pitcairn Mine; Drift, Pgh. Seam, 84 in. thick.
PO—Clarksburg, W. Va.; SP—Same; CTY—Harrison; RR—B. & O., W. V. & P. Div.
PR—C. H. Diffenderffer, Philadelphia, Pa.
TR—J. A. Clark....Fairmont, W.Va.
GM—Harry B. Clark, " "
GS—J. A. Clark, Jr., " "
PA—J. A. Clark, Jr., " "
EM—G. J. Altstetter, " "
MM—Homer Palmer..Clarksburg, W.Va.
EE—Homer Palmer, " "
S of H—1 Elec., 1 steam loco.
S of M—4 Elec. mach.
PP—3 Erie City, water tube boilers, total 300 H. P., 1 200 K. W., gen. unit 250 volts D. C., 2 pumps.
EMP—150. Last fiscal year output 200,000 tons.
Sales Agents, Blair-Parke C. & C. Co., Philadelphia, Pa., and Jess Strathmore & Co., Clarksburg, W. Va.

HARTY COAL CO.
Harty Mine; Drift; No. 3 Poca. Seam, 48 to 60 in. thick.
PO—Mullens, W. Va.; CTY—Wyoming; RR—Virginian.
PR—J. A. Wood, Sullivan, W. Va.
TR—J. C. Sullivan Mullens, W. Va.
PA—J. C. Sullivan, " " "
GS—J. C. Sullivan, " " "
CE—Philip Konrad, Kanawha Falls, W. Va.
PP—Power to be purchased.

HAYWOOD COAL MINING CO.
Monroe Mine, Drift, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Shinnstown, W. Va.; SP—Monroe Mine, W. Va.; CTY—Harrison; RR—B. & O., Monagah Div.
PR—G. H. Wisser, Shinnston, W. Va.
PA—G. H. Wisser....Shinnstown, W.Va.
TR—C. H. Wisser,.. McKeesport, Pa.
GM—C. H. Wisser. " "
MS—G. H. Wisser, Shinnston, W. Va.
EM—Fred Tabbott.....Fairmont, W.Va.
EE—E. C. Wisser, Shinnston, " "
SCO—Haywood Coal Mng. Co. Buyer, G. H. Wisser, " " "
SM—C. H. Vincent, " " "
S of H—Mules and 1 gasoline motor. track gauge 42 in.
S of M—4 Elec. machines.
PP—2 pumps. Power furnished.
EMP 75. Last fiscal year output, 68,221 ntos.

HEMLOCK HOLLOW COAL CO.
Hemlock Hollow Mine. Drift. Fire Creek seam, 3 ft. 10 in thick.
PO—Lawton, W. Va. SP—Layland, W. Va. CTY—Fayette. RR—C. & O.
PR—J. L. Pritchard, Charleston, W.Va.
TR—W. A. Brown, Lawton, " "
GM—W. A. Brown, " " "
GS—A. A. Brown, " " "
PA—H. H. Brown, " " "
EM—Philip Konrad, Kanawha Falls, W. Va.
EE—J. Merritt, Lawton. " "
SCO—Hemlock Hollow Store, buyer, H. H. Brown, Lawton, W. Va.
S of H—6 Elec. loco. Track gauge 44 in.
S of M—Hand and 6 elec. machines.
PP—Power purchased. Sales agency, New River Consolidated Co., Thurmond, W. Va.

HEMPHILL COLLIERY CO.
See Welch Coal Co

HENRIETTA-POCAHONTAS COAL CO.
Henrietta Mine, Drift, Davy, Sewell Seam, 30 to 42 in thick.
PO—Bartley, W. Va., SP—English, CTY—McDowell. RR—N. & W., Dry Fork Branch.
PR—L. H. Clark.....Kyle, W.Va.
TR—W. Y. Stokes.....Welch, W.Va.
GM—J. W. Stricker....Bartley, W.Va.
GS—J. W. Stickler " "
PA—J. W. Stickler, " "
CE—H. J. Brook.....Welch, W.Va.
EM—H. J. Brook, " "
SCO—Henrietta Store, Buyer, P. H. King
S of H—1 Gasoline motor; track gauge 36 in.
S of M—Hand.
PP—1 boiler, 12 H. P. 1 pump.
EMP—35. Last fiscal year output 1800 tons.
Sales Agents, Victoria Coal Co., Cleveland Ohio.

HERO COAL & COKE CO.
Now Antler Coal Co.

HIAWATHA COAL & COKE CO.
See Smokeless Coal & Coke Co.

HICKORY ASH COAL CO. (THE)
General Office, Wellston, Ohio.
"Hickory Ash," Mine, Drift, Kanawha No. 2 Gas Seam, 4 to 6 ft. thick
PO—Sterling, W. Va.. SP—Same, CTY — Boone RR—C. & O., Coal River Div.
PR—F. A. Carraci.....Wellston, O.
TR—C. L. Voglesang, " "
GM—H. A. Goddard, " "
GS—Grant McGhee .. Sterling, W. Va.
PA—Grant McGhee, " "
EE—Jas. Beard, " "
SCO—The Hickory Ash Coal Co., Buyer, F. L. Wood, Sterling W. Va.
S of H—4 Elec. loco., standard gauge track.
S of M—6 Elec. machines.
PP—4 Return tubular boilers, total 200 H. P., 220 volts D. C.
EMP—150. Last fiscal year output 60,000 tons.
Sales agent, C. L. Voglesang, Wellston, Ohio.

HIORRA COKE CO.
General Office, Uniontown, Pa.
Vulcan Mine, Drift, Upper Freeport Seam, 52 inches thick
PO—Hiorra, W. Va., SP—Same, CTY —Preston. RR—B.&O.
PR—W. A. Stone,....Uniontown, Pa.
GM—W. A. Stone, " "
PA—Geo. H. Bortz, " "
MS—Geo. L. Humphreys, Hiorra, W.Va.
S of H—Mules for gathering, and 1 elec. loco., track gauge 42 in.
S of M—Hand and 6 comp. air mach.
PP—1 Return tubular 150 H. P. boiler, 1 air comp., also buy elec. power. 100 Bee Hive coke ovens.
Last fiscal year output 52,350 tons. Sales agency, W. A. Stone & Co., Uniontown, Pa.

HITCHMAN COAL & COKE CO.
General Office, Wheeling, W. Va.
Hitchman Mine, Slope, Pittsburgh No. 8 Seam, 5 ft. 8 in. thick.
PO—Benwood, W.V., SP—Same, CTY —Marshall. RR—B.&O.
PR—E. S. Hitchman..Wheeling, W.Va
TR—W. H. Koch, " "
GM—W. H. Koch, " "
PA—W. H. Koch. " "
GS—E. C. Pickett, " "
EM—H. Weishy. " "
MM—T. I. Thomas, " "
EE—T. I. Thomas " "
SCO—Western Supply Co., " "
S of H—Mules, rope and 7 elec loco. track gauge 42 in.
S of M—15 Elec. machines.
PP—2 Keeler water tube boilers. and 3 Phoenix return tubular boilers,, total 600 H. P., 3 gen. units 250 volts D. C., 2 pumps.
EMP—450. Last fiscal year output 382,741 tons. Sales agents, E. A. Upstill & Co., Cleveland, O.

HITE COAL & COKE CO.
General Office, Fairmont W. Va.
Dixie Mine, Drift, "Upper Freeport" Seam, 56 to 60 in. thick.
PO—Hiorra, W. Va., SP—Same and Newburg, W. Va., CTY—Preston. RR—B.&O., Raccoon Valley Br.
PR—John Y. Hite..Fairmont, W.Va.
PA—John Y. Hite, " "
MS—John Y. Hite, " "
TR—Louis Rafetto...Philadelphia, Pa.
EM—H. C. Larew, Jr., Independence, W.Va.
S of H—Mules, track gauge 42 in.
S of M—Hand.
EMP—25. Last fiscal year output 18,000 tons. Sales agent, Hite & Rafetto, Phila., Pa.

HOLLIDAY COAL CO.
See the Aileen Coal Co.

HORSE CREEK BLOCK COAL CO.
General Office, Columbus, O.
No. 1 Mine; Drift; Kanawha No. 5 Seam, 52 to 56 in. thick.
PO—Woodville, W. Va.; SP—Reece, W. Va.; CTY—Lincoln; RR—C. & O., Coal River Br.
PR—C. W. Thompson....Columbus, O.
TR—Edwin F. McManigal, " "
GM—P. C. Morris.....Nelsonville, O.
GS—P. C. Morris, " "
EM—J. L. Murphy, " "
MM—P. B. Verity, " "
PA—Chas. Milligan....Woodville, W.Va.
MS—Chas. Milligan, " "
SCO—Address the Company, " "
S of H—1 Elec. loco.
S of M—2 Elec. mach.
PP—1 Return tubular boilers, total 150 H. P., gen. unit 250 volts D. C., 1 pump.
EMP—20.
Sales Agency, New York Coal Co., Columbus, O.

HOUSTON COAL & COKE CO.
Houston No. 1 and 2, Drifts, Pocahontas No. 3 Seam, 5½ to 8½ ft. thick.
PO—Elkhorn, W. Va., SP—Same. CTY McDowell; RR—N. & W.
PR—T. E. Houston....Cincinnati. O.
TR—T. E. Houston.....Cincinnati, O.
GM—T. E. Houston, " "
GS—Benjamin Lewis..Elkhorn, W.Va.
MS—E. L. Stafford, " "
PA—W. W. Wood, " "
EM—M. H. Hall, " "
MM—W. J. Stone, " "
EE—W. J. Stone " "
SM—G. C. Matthews, " "
S of H—Mules, and 3 elec. loco., track gauge 44 in.
S of M—Hand.
PP—3 Berry and 3 Erie City return tubular boilers, total 1200 H. P., 4 gen. units 220 volts D. C.
EMP—400. 230 Bee Hive coke ovens.
Sales agency, Houston Coal Co., 1522 Union Trust building, Cincinnati, Ohio.

HOUSTON COLLIERIES CO.
General Office, Olmsted, W. Va.
PR—T. E. Houston..Elkhorn. W.Va.
TR—N. H. Franklin, " "
GM—T. E. Houston, " "
GS—Benjamin Lewis, " "
PA—N. H. Franklin, " "
EM—R. J. Austin, " "
MM—E. L. Knight, " "
SCO—Houston Coal & Coke Co., Buyer, G. C. Matthews, Elkhorn W.Va.
Sales agent, Kuper Hood, Cincinnati, O.

Houston 1 and 2, Drifts, Pocahontas No. 3 Seam, 8½ to 9 ft. thick.
PO—Elkhorn, W.Va., SP—Same, CTY —McDowell. RR—Main Line N. & W.
MS—E. L. Stafford, Elkhorn, W. Va.
S of H—Mules, and 3 elec. loco., track gauge 44 in.
S of M—Hand.
PP—6 Return tubular boilers, total 1200 H. P., 2 gen. units 250 volts D. C., 1 air comp.
EMP—400. 230 Bee Hive coke ovens. Last fiscal year output 500,000 tons.

Keystone Mine, Drift, Pocahontas No. 3 Seam, 7 to 8 ft. thick.
PO—Keystone, W. Va. SP—Same, CTY —McDowell. RR—Main Line, N. & W.
MS—A. J. Stuart,..Keystone, W.Va.
MS—L. M. Rish, " "
S of H—Mules and 3 elec. loco., track gauge 44 in.
S of M—Hand, and 1 elec. machine.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units 500 volts D. C.
EMP—400. 215 Bee Hive coke ovens. Last fiscal year output 500,000 tons.

HOWARD COLLIERY CO.
Howard Colliery and Frederick Mine, Drifts, Winifred Seam, 5 ft. 2 in. thick. Operate washery at Howard Colliery.
PO—Chattaroy, W.Va., SP—Same, CTY —Mingo. RR—N. & W.
PR—F. L. Schoew..Chattaroy, W.Va.
TR—W. S. Estler, " "
GM—F. L. Schoew, " "
GS—W. S. Estler, " "
Asst Supt—H. S. Schoew, " "
PA—W. S. Estler, " "
EM—F. E. Strohmeier, " "
SCO—Howard Store, " "
Buyer, F. W. Burmeister, Chattaroy, W. Va.
S of H—Mules and 2 steam loco., track gauge 48 in.
S of M—16 Compressed air mach.
EMP—250 Howard Colliery, 140 Frederick mine, 110.
Last fiscal year output, Howard Colliery, 104,835.55 tons. Frederick Mine 64,065 tons.
Sales agents, Hinsch-Briscoe Coal Co., Cincinnati, Ohio.

HOWARD JUNIOR COAL CO.
Howard Junior Mine, Drift, Winifred Seam, 5 ft. 2 in thick. Operate washery.
PO—Chattaroy, W.Va., SP—Same, CTY —Mingo. RR—N. & W.
PR—F. L. Schoew..Chattaroy, W.Va.
TR—W. S. Estler, " "
GS—W. S. Estler, " "
PA—W. S. Estler, " "
GM—F. L. Schoew, " "
Asst Supt—H. S. Schoew, " "
EM—F. E. Strohmeier, " "
SCO—Howard Store, Buyer, Fred W. Burmiester, Chattaroy, W.Va.
S of H—Mules and 2 steam loco. track guage 48 in.
S of M—11 Comp. air machines.
PP—2 Ames upright boilers, 2 Phoenix return tubular boilers, total 400 H. P.
EMP—120. Last fiscal year output 84,208.50 tons.
Sales agents, Hinsch-Briscoe Coal Co. Cincinnati, Ohio.

HUDDLESTON COAL & COKE CO.
Huddleston Mine; Drift, Eagle Seam, 56 to 84 in. thick.
PO—Accoville, W. Va.; SP—Bayman, W. Va.; CTY—Logan; RR—C. & O., G. V. Br.
PR—J. A. Huddleston,..Excelsior, W.Va.
GM—J. A. Huddleston, " "
TR—W. W. Whyte.....Welch, W.Va.
GS—W. L. Robinson....Accoville, W.Va.
MS—William White, " "
SCO—Address the Company, " "
S of H—1 Elec. loco. and mules; track gauge 44 in.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., gen. unit 250 volts D. C.
EMP—50. Last fiscal year output 50,000 tons.
Sales Mgr., J. C. Laym, Cincinnati, O.

HUGHES CREEK COAL CO.
PR—James Kay....Charleston, W.Va.
TR—W. H. Morris..Hugheston, W.Va.
GS—W. H. Morris, " "
PA—W. H. Morris, " "
EM—J. B. Eton...Charleston, W.Va.
SCO—Hughes Creek Coal Co., Buyer, C. W. Rupe, Hugheston, W. Va.
Sales agents, New River & Ohio Coal Co., Charleston, W. Va.

Hughes Creek Gas, Drift, No. 2 Gas Seam, 3 ft. 8 in. to 4 ft. 8 in. thick.
PO—Hugheston, W. Va. SP—Same, CTY —CTY—Kanawha, RR—Kanawha & M. Ry.
S of H—2 Elec. loco., track gauge 42 in.
S of M—3 Elec. machines.
PP—2 Water tube boilers, 2 gen. units 250 volts D. C., 3 pumps.
EMP—100. Last fiscal year output 90,000 tons.

Hughes Creek Splint, Drift, Coalburg Seam, 4 ft. 8 in. to 5½ ft. thick.
PO—Hugheston, W. Va. SP—Same. CTY —Kanawha. RR—Kanawha & Michigan Ry.
S of H—Mules, and 2 elec. loco., track gauge 42 in.
S of M—5 Elec. machines.
PP—2 water tube boilers, 2 gen. units, 250 volts, D. C., 1 pump.
EMP—100. Last fiscal year output 55,000 tons.

HUMPHREYS COAL CO.
Humphreys Mine; Slope; L. Freeport Seam, 60 in. thick.
PO—Philippi, W.Va.; SP—Same; CTY —Barbour; RR—B. & O.
PR—D. Perry Stanton, No. 1 Broadway, New York, N.Y.
TR—Wm. J. Faux, Harrison Bldg., Philadelphia, Pa.
GS—A. D. Woodford, Philippi, W.Va.
S of H—1 Elec. loco.
S of M—Elec. mach.
EMP—30. Last fiscal year output 50,000 tons.
Sales Agency, Logan Coal Co., Philadelphia, Pa.
Successors to the Humphreys Collieries Co.

HUMPHREYS COLLIERIES CO.
Now Humphreys Coal Co.

HUTCHINSON COAL CO.
General Office, Fairmont, W. Va.
8 mines in West Virginia, 1 Mine in Ohio.
PR—M. L. Hutchinson, Fairmont, W.Va.
TR—C. H. Jenkins, " "
GM—C. H. Jenkins, " "
GS—C. J. Ryan, Fairmont, W. Va.
PA—M. C. Lough, " "
EM—Bruce Bailey, " "

Hutchinson Mine. Drift. Pittsburgh Seam 5 to 7½ ft. thick.
PO—Mt. Clare, W. Va., SP—Byron, W. Va., CTY—Harrison. RR—B.&O., W.Va. & Pgh. Br.
Continued on Next Page.

MS—C. L. Lutton .. Mt. Clare, W.Va.
SM—W. G. H. Crawford, " "
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—4 Elec. and 6 comp. air mach.
PP—3 Return tubular boilers, total 450 H. P. 250 volts D. C., 1 Air comp. and 4 pumps.
EMP—191. Coke ovens, 20 Bee Hive. Last fiscal year output 282,800 tons.

Erie Mine, Drift, Pittsburgh Seam, 6 to 8½ ft. thick.
PO—Hepzibah, W. Va. SP—Erie Mine, W. Va., CTY—Harrison. RR—B. & O., W. Va. Short Line.
MS—John Daily.....Hepzibah, W.Va.
SM—J. L. Howard, " "
S of H—Mules, and 1 elec. loco., track gauge 42 in.
S of M—4 Elec. and 6 comp. air mach
PP—4 Return tubular boilers, total 460 H. P., 350 volts D. C., 1 air compressor.
EMP—156. Last fiscal year output 236,033 tons.

Linden Mine, Drift, Pittsburgh Seam, 4½ to 5 ft. thick.
PO—Mason, W. Va., SP—Linden Mine, W.Va., CTY—Mason. RR—B.& O., Ohio River Div.
MS—Jacob Phillips....Mason, W.Va.
SM—J. E. Jividen, " "
S of H—Mules and 2 elec. loco., track gauge 38½ in.
S of M—4 Elec. machines.
PP—2 return tubular boilers, total 300 H. P., gen. units 250 volts D. C., 2 pumps.
EMP—152. Last fiscal year output 96,179 tons.

Florence Mine, Drift, Pittsburgh Seam, 4 to 6½ ft. thick.
PO—Mt. Clare, W. Va., SP— Byron, W. Va., CTY—Harrison. RR— B. & O.
MS—Walter Miller....Mt. Clare,W.Va.
S of H—1 Elec. loco.; track gauge 42 in.
S of M—3 Elec. machines.
PP—500 volts D. C.
EMP—96. Last fiscal year output 109,-524 tons.

McCandlish Mine, Drift, Pittsurgh Seam 6 to 8½ ft. thick.
PO—Meadowbrook, W. Va., SP—Same, CTY—Harrison. RR—B. & O., M. R. Div.
MS—John Reuter....Meadowbrook, W.Va.
SM—J. H. McGee, " "
S of H—Mules and 2 elec. loco., track gauge 42 inches.
S of M—6 Elec. machines.
PP—3 Return tubular boilers, total 450 H. P., 250 volts D. C., 4 pumps.
EMP—191. Last fiscal year output 251,399 tons.

Girard Mine, Drift, Pittsburgh Seam, 6½ to 8½ ft. thick.
PO—Dola, W. Va., SP—Same, CTY—Harrison. RR—B. & O., W. Va. Short Line.
MS—A. V. Morgan....Dola. W.Va.
SM—John E. Cuff, " "
S of H—Mules and rope; track gauge 42 in.
S of M—5 Comp. air mach.
PP—1 return tubular boiler, 150 H. P., 250 volts D.C., 1 air comp. and 2 pumps.
EMP—90. Last fiscal year output 102,-033 tons.

Delta and York Mines, Drifts, Pittsburgh Seam, 5½ to 7½ ft. thick.
PO—Reynoldsville, W.Va., SP—Same, CTY—Harrison. RR—B. & O., Parkersburg Branch.
MS—Ward Malone, Reynoldsville, W.Va.
SM—P. H. Moore, " "
S of H—Mules and rope; track gauge 42 in.
S of M—Pick, and 5 comp. air mach.
PP—2 return tubular boilers, total 235 H. P., 250 volts D. C., 1 pump.
EMP—Delta 54; York 45. Last fiscal year output, Delta 71,173 tons; York 45,071 tons.

HYGRADE COAL CO.
Leased to Klingfelter & Co.

IMPERIAL COLLIERY CO.
Mines Nos. 1, 2 and 3, Drifts, Eagle Seam, 4 to 6½ ft. thick.
PO—Burnwell, W. Va., SP—Same, CTY—Kanawha. RR—C. & O.
PR—F. P. Christian,..Lynchburg, Va.
TR—G. H. Miller, " "
GM—Quin Morton.....Burnwell, W.Va.
CS—F. H. Morton, " "
PA—F. H. Morton, " "
CE—R. B. Whitaker, Milburn W.Va.
EM—R. B. Whitaker, " "
EE—E. A. Hudson..Burnwell, W.Va.
SM—E. O. Settle, " "
S of H—6 Elec. loco., track gauge 44 inches.
S of M—8 Elec. and 6 comp. air mach.
PP—3 Water tube boilers, total 450 H. P., 1 Air comp.
EMP—300. Last fiscal year output 180,000 tons.
Sales Agent, Quin Morton, Burnwell, W. Va.

IMPERIAL POCAHONTAS COAL CO.
Out of business.

INDIAN RIDGE COAL & COKE CO.
Indian Ridge Mine, Drift, No. 3 Pocahontas Seam, 4 ft. 8 in. to 5 ft. thick.
PO—Worth, W. Va. SP—Crumpler, W. Va., CTY—McDowell RR—N. & W., North Fork Branch.
PR—Worth Kilpatrick, Connellsville, Pa.
TR—J. A. Armstrong, " "
GM—A. D. Rice.....Worth, W.Va.
GS—A. D. Rice, " "
PA—A. D. Rice, " "
MS—H. H. Honaker....Crumpler, W.Va.
EM—Earnest Bailey, " "
EE—Wm. Lambert, " "
SCO—Indian Ridge Commmisary, Buyer, R. A. Toch, Worth, W. Va.
S of H—Mules and 6 elec. loco., track gaue 48 in.
S of M—Hand, and 6 elec. machines.
PP—3 Return tubular boilers, total 375 H. P., 2 gen. units 250 volts D. C., 1 pump. Not in use. Buy all power.
EMP—200. 200 Bee Hive coke ovens. Last fiscal year output 105,874 tons.
Sale agents, Castner, Curran & Bullitt Co., Philadelphia, Pa.

IRONA COAL CO.
Irona No. 2 Mine, Drift, Up Freeport Seam, 4 ft. thick.
PO—Howesville, W. Va.; CTY—Preston;
GM—J. H. Weaver....Howesville, W.Va.
MF—Edward Jones, " "
S of M—Hand.
EMP—45. Last fiscal year output 13,697 tons.
State report.

IROQUOIS COAL MINING CO.
PR—W. H. Thomas..Bramwell, W.Va.
No report.

IRVINGTON LATE COAL CO.
See Gordon B. Late Coal Co.,

ISLAND CREEK BLOCK COAL CO.
Sold to Jones-Parsons Coal Co.

ISLAND CREEK COLLIERY CO.
Switzer Mine; Drift, No. 2 Gas Seam, 84 to 102 in. thick.
PO—Switzer, W. Va.; SP—Same; CTY—Logan; RR—L. & S.
PR—J. M. Vest.....Switzer, W.Va.
GM—J. M. Vest, " "
GS—J. M. Vest, " "
PA—J. M. Vest, " "
MS—Henry Miller, " "
EE—Wm. Black, " "
SM—John Ross, " "
TR—Fred Prichard....Huntington, W.Va.
EM—W. G. Wilkins Co...Logan, W.Va.
S of H—1 Elec. loco. and mules; track gauge 48 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, toal 300 H. P., 2 gen. units 300 volts D. C., 3 pumps.
EMP—175. Last fiscal year output 150,000 tons.

IVY BRANCH COAL CO.
Ivyton Mine; Drift; Seam 60 in. thick.
PO—Charleston, W.Va.; CTY—Kanawha; RR—C. & O., Coal River Br.
PR—A. C. Moore, Charleston, W.Va.
TR—John W. Moore, " "
PA—John W. Moore, " "
S of H—Elec. loco.
S of M—Elec. mach.
Sales Agency, John W. Moore, Charleston, W.Va.
Expect to ship coal July 1st.

JACKSON COAL & MINING CO., (THE)
Jackson Furnace, Drift, Pittsburgh No. 8 Seam, 4½ ft. to 5½ ft. thick.
PO—Hartford, W. Va., SP—Same, CTY—Mason. RR—B. & O.
PR—A. E. Smith....Hartford, W.Va.
TR—H. F. Smith, " "
GM—H. F. Smith, " "
GS—E. A. Smith, " "
PA—E. A. Smith, " "
MS—Earl Ewing, " "
EE—Earl Ewing, " "
EM—Ohio Eng. & Con. Co., Pomeroy, O.
SCO—Liverpool Salt & Coal Co.,
SM—H. F. Smith....Hartford, W.Va.
S of H—2 Elec. loco., track gauge 42 in.
S of M—3 Elec. machines.
PP—3 return tubular boilers, total 450 H. P., 2 gen. units, 250 volts D. C., 4 pumps.
EMP—110. Last fiscal year output 33,479 tons.

JAMISON COAL & COKE CO.
General Office, Greensburg, Pa.
3 Mines in W. Va., 5 Mines in Penna.
PR—John M. Jamison, Oliver Bldg., Pittsburgh, Pa.
TR—Donald Macleod, Oliver Bldg., Pittsburgh, Pa.
PA—M. W. Head, Oliver Bldg., Pittsburgh, Pa.
GM—R. H. Jamison....Greensburg, Pa.
CE—C. E. Cowan, " "
Asst GS—John M. Wolfe, Fairmont, W.Va.
Asst. Chief Eng., S. M. Eccles, Fairmont, W.Va.
SCO—Underwood Supply Co., Farmington, W.Va.
Sales Agent, W. G. Ireland, Oliver Bldg., Pittsburgh, Pa.

Jamison No. 7 Mine; Shaft, Pgh. Seam, 108 in. thick.
PO—Barrackville, W. Va.; SP—Same; CTY—Marion RR—B. & O.
MS—Edwin Williams, Barrackville, W.Va.
S of H—2 Elec. loco. and mules; track gauge 44 in.
S of M—2 Elec., 19 comp. air mach. and hand.
PP—4 Erie, water tube boilers, total 2000 H.P., 2 compressors, 1 pump.
EMP—378. Last fiscal year output 612,817 tons.

Jamison No. 8 Mine; Shaft; Pgh. Seam, 102 in. thick.
PO—Farmington, W. Va.; SP—Underwood, W. Va.; CTY—Marion; RR—B. & O., Wheeling Div.
MS—W. A. Gadd....Farmington, W.Va.
S of H—4 Elec. loco.; track gauge 44 in.
S of M—1 Elec., 35 comp. air mach.
PP—8 Water tube boilers, total 2400 H. P., 3 compressors, 1 pump.
EMP—445. Coke ovens 115 Bee Hive. Last fiscal year output 552,821 tons.

Jamison No. 9 Mine; Shaft, Pgh. Seam 102 in. thick.
PO—Farmington, W. Va., R. F. D. No. 2; SP—Underwood, W. Va.; CTY—Marion; RR—B. & O., Wheeling Div.
MS—P. D. Costello, Farmington, W.Va., R. F. D. No. 2.
S of H—7 Comp. air loco.; track gauge 44 in.
S of M—26 Comp. air mach.
PP—8 Water tube boilers, toal 1850 H. P., 4 compressors, 1 pump.
EMP—360. Last fiscal year output 436,333 tons.

JENKINS, J. B., COAL & COKE CO. (THE)
General Office, Prudential Bldg., Buffalo, N. Y.
Ariana Mine; Drift, L. Kittanning Seam, 108 to 120 in. thick.
PO—Mabie, W. Va.; SP—Same; CTY—Randolph; RR—C. & C.
PR—F. P. Merrell.....Hornell, N. Y.
VP—W. H. Hufstader....Buffalo, N. Y.
GM—W. H. Hufstader, " "
TR—Paul B. Hanks....Wellsville, N. Y.
Secy—J. L. Moore, " "
Res Mgr—George M. Finch, Mabie, W.Va.
MS—David Edwards, " "
EE—W. R. Davidson, " "
S of H—1 Elec. loco. and mules; track gauge 42 in.
S of M—Hand.
PP—2 McEwen return tubular boilers, total 200 H. P., 1 gen. unit 250 volts D. C.
EMP—100. Last fiscal year output 100,000 ons.
Sales Agent, Chas. A. Storck, Buffalo, N. Y.

JEWETT, BIGELOW & BROOKS COAL CO.
General Office, 111 Devonshire St., Boston, Mass.
Mines Nos. 1, 2, 3, 4, 5 and 6; Drifts; Pocahontas Seam; 30 to 54 in. thick.
PO—Twin Branch, W. Va.; SP—Same; CTY—McDowell; RR—N. & W.
VP—R. Grant.....Boston, Mass.
TR—E. M. Richards, " "
CE—Timothy W. Sprague, " "
PA—H. A. McCoy..Twin Branch, W.Va.
GS—C. L. Biddison, " "
EM—S. D. Olwin, " "
MM—F. B. Agers, " "
EE—J. H. Parks, " "
SM—D. W. Bartoo, " "
S of H—Mules and 7 Elec. loco. Track gauge 48 in.
S of M—Hand and 23 Elec. mach.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units, 550 volts D. C., 28 pumps.
EMP—500. Last fiscal year output 476,457 tons.
Sales Agencies, Jewett, Bigelow & Brooks Detroit, Mich.; New England Coal & Coke Co., Boston, Mass.

JOHN'S BRANCH COAL CO.
General Office, Yukon, W. Va.
No. 1 Mine, Drift, War Creek Seam.
PO—War, W. Va. CTY—McDowell. RR—N. & W., Dry Fork Branch.
MS—W. Brooks.....War, W. Va.
S of H—Mules.
S of M—Hand.
EMP—24. Last fiscal year output 4,623 tons.
State report.

JOHNSON, W. R., COAL CO.
Oakland Nos. 1 and 2, Drift, Nos. 1 and 2 Gas Seam.
PO—Smithers, W. Va. SP—Same. CTY—Fayette. RR—K. & M..
PR—W. R. Johnson, Jr., Smithers, W. Va.
TR—W. R. Johnson, Jr., " "
GM—W. R. Johnson, Jr., " "
PA—W. K. Bridges, " "
EE—Joe Davenport, " "
SM—J. D. Cushman, " "
S of H—Mules and 4 elec. loco. Track gauge 40 and 42 inches.
S of M—Hand, and 3 elec. machines.
PP—2 return tubular boilers, total 300 H. P. 2 Gen. units 500 volts D. C.
EMP—150. Last fiscal year cutput 65,000 tons.

JOHNSON, E. R. COAL MINING CO.
Nos. 1 and 2 Mines; Drift; Kanawha Seams, 4 to 5 ft. thick.
PO—Hughey, W. Va. SP—Peach Creek, W. Va. CTY—Logan. RR—C. & O.
PR—Edw. L. Stone,.... Roanoke, Va.
TR—Al. A. Stone, " "
GM—L. E. Armentrout, Borderland, W. Va.
PA—J. P. Small,..... Hughey, W. Va.
MS—J. P. Small, " "
EE—W. E. Tolbert, " "
CE—J. B. McCorkle, Logan, W. Va.
SM—E. C. Bartram.....Hughey, W.Va.
S of H—3 Elec. loco. Track gauge 44 in.
S of M—Elec. mach.
PP—2 Water tube boilers, total 300 H. P. 2 gen. units, 250 volts D. C. 2 pumps.
EMP—75. Last fiscal year output 65,000 tons.

JOHNSON-McINTYRE COAL CO.
Gilbert Mine.
PO—Rossbud, W. Va.; CTY—Harrison.
No report.

JONES-PARSONS COAL CO.
Idamay Mine, Drift, Main Island Creek Seam, 6 to 108 in. thick.
PO—Barnabas, W. Va.; SP—Same CTY—Logan; RR—C. & O., Guyan Div.
PR—Harry P. Jones....Barnabas, W.Va.
GM—Harry P. Jones, " "
PA—Harry P. Jones, " "
EM—W. A. Sidel, " "
TR—J. K. Parsons, " "
MS—Jos. P. Holsing, " "
S of H—Mules; track gauge 44 in.
S of M—Hand.
EMP—50.
Ouput for 1915 will be 100,000 tons.
Successors to the Island Creek Block Coal Co.

JORDAN, S. H.,
General Office, Keyser, W. Va.
One Mine in Maryland, one mine in W. Va.
Cottage Street Mine; Drift, Freeport Seam. 24 to 84 in. thick.
PO—Bayard, W. Va.; SP—Same; CTY—Grant, RR—W. M.
Secy—Pope Jordan.....Keyser, W. Va.
GM—S. H. Jordan, " "
PA—S. H. Jordan, " "
GS—J. T. Jordan, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—25.

KANAWHA RIVER COAL CO.
Montgomery No. 2 Mine; Drift, No. 2 Gas Seam; 67 to 80 in. thick.
PO—Montgomery, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Main Line.
PR—A. B. Thompson Montgomery, W.Va.
GM—A. B. Thompson, " "
MS—A. B. Thompson, " "
TR—S. H. Montgomery, " "
PA—F. A. Taylor, " "
EM—J. H. Jackson, " "
SCO—Montgomery Coal Co. " "
S of H—Mules
S of M—1 Elec. mach. and hand.
PP—Power purchased.
EMP—20.
Sales Agent, F. A. Taylor, Montgomery, W. Va.
Commenced operating January 4.

KATHERINE COAL CO.
Katherine Mine; Pgh. No. 8 Seam. 72 to 108 in. thick.
PO—Gilmer, W.Va.; SP—Same; CTY—Gilmer; RR—C. & O.

Continued on Next Page.

KATHERINE COAL CO.—Continued.
PR—W. G. Colborn, ...Gilmer, W.Va.
GM—W. G. Colborn, " "
GS—W. G. Colborn, " "
TR—N. J. Amick, " "
PA—N. J. Amick, " "
MS—D. C. Yates, " "
SCO—R. A. Darnoll, " "
CE—G. J. Alstetter, Clarksburg, W.Va.
S of H—Mules.
S of M—1 Elec. mach.
PP Power purchased.
Output 12,000 tons.
Formerly the Katherine Mine of the Gilmer Con. Coal Co.

KEENEY'S CREEK COLLIERY CO.
General Office,..... Winona, W. Va
PR—W. S. Wood, Charleston, " "
TR—W. S. Wood, " " "
GM—J. Wade Bell Winona, " "
GS—J. Wade Bell, " " "
PA—J. Wade Bell, " " "
CE—Philip Konrad, Kanawha Falls, W. Va.
EM—Philip Konrad, " " " "
MM—T. H. Seacrist, Winona, " "
EE—Oscar Blozer, " " "
SM—W. F. Hall, " " "
Sales Agency, New River Coal Co., Charleston, W. Va.

Smokeless Mine, Drift, Sewell Seam, 3½ to 4 ft. thick.
PO—Winona, W. Va. SP—Masters, W. Va. CTY—Fayette. RR—C. & O. Keeney's Creek Branch.
S of H—Mules and 3 elec. loco. Track gauge 42 inches.
S of M—Hand and 4 elec. machines.
PP—2 Westinghouse M. G. sets, 100 K. W., 250 volts D. C., 3 pumps.
EMP—150. Last fiscal year output 76,000 tons.

Boone Mine, Drift, Sewell Seam, 3½ to 4 ft. thick.
PO—Boone, W. Va., SP—Same, CTY—Fayette, RR—C. & O., Keeney's Creek Branch.
S of H—Mules and 1 elec. and 1 steam loco., track gauge 44 inches.
S of M—Hand and 3 elec. machines.
PP—2 Water tube boilers, total 300 H. P., 1 gen, unit 250 volts D.C.
EMP—125. Last fiscal year output 63,000 tons.

KELLY'S CREEK COLLIERY CO.
PR—F. M. Staunton, Charleston, W.Va.
TR—Lester Ridenour.....Ward, W.Va.
GM—J. W. Dawson, " "
GS—Chas. C. Gressang, " "
PA—Chas. C. Gressang, " "
EM—Pendleton Spruce, " "
MM—C. E. Hedric, " "
EE—C. E. Hedric, " "
SM—W. S. Brown, " "
Sales Agent, J. W. Dawson, Ward, W.Va.

Mine No. 1, Drift, Coalburg Seam, 5 to 6 ft. thick.
PO—Ward, W. Va., SP—Cedar Grove, W. Va., CTY—Kanawha. RR—K. & M., Kelly's Creek Branch.
MS—H. E. Vaughan.....Ward, W.Va.
S of H—Mules; 2 elec. and 1 gasoline loco., track gauge 42 in.
S of M—5 Elec. machines.
PP—1 50_K.W. motor gen. units, 250 volts D. C. Buy power.
EMP—80. Last fiscal year output 99,000 tons.

Mines No. 3 and No. 3½, Drifts, Coalburg Seam, 5 to 6 ft. thick.
PO—Ward, W. Va., SP—Cedar Grove, W. Va., CTY—Kanawha. RR—K. & M., Kelly's Creek Branch.
MS—J. T. Shearer.....Ward, W. Va.
S of H—Mules and 4 elec. loco., track gauge 42 in.
S of M—9 Elec. machines.
PP—3 Return tubular boilers, total 300 H. P., 2 gen. units 250 volts D. C., 2 pumps.
EMP—250. Last fiscal year output 206,000 tons.

KENDALL LUMBER CO.
General Office, Oliver Bldg., Pgh., Pa.
Arnold Run Mine, Slope, Upper Freeport Seam 3 to 5 ft. thick.
PO—Crellin, Md.; SP—Hutton, Md.; CTY—Garrett. RR—B. & O., Preston Branch.
PR—J. L. Kendall....Pittsburgh, Pa.
TR—W. F. Schatz, " "
GM—S. A. Kendall.....Crellin, Md.
GS—Chas. W. Ream, " "
MS—P. L. Mersing, " "
SM—H. K. Friend, " "
S of H—Mules; track gauge 36 in.
S of M—Hand.
EMP—16.

KENOVA COAL MINING CO.
Kenova Mine, Drift.
PO—Branchland, W. Va.; SP—Same; CTY—Wayne; RR—C. & O., O. V. Div.
PR—Henry Holonscheid....Chicago, Ill.
GS—D. K. Geiger..Branchland, W. Va.
PA—D. K. Geiger, " "
Idle since January, 1911.

KEYSTONE COAL & COKE COMPANY.
See Houston Collieries Co.

KILARM COAL & COKE CO.
Now Whyel Coal Co.

KESSLER, D. P. COAL CO.
Arcola Mine, Drift, L. Kittanning Seam, 28 to 36 in. thick.
PO—Cowen, W. Va.; SP—Arcola, W. Va.; CTY— Webster; RR— B. & O.
PR—Dr. D. P. Kessler....Cowen, W.Va.
MS—S. L. Westfall, " "
CE—S. M. Smith, " "
EM—J. E. Anderson, " "
S of H—Mules.
S of M—Hand.
Last fiscal year output 10,000 tons.

KIMBALL POCAHONTAS COAL CO.
Virginia Mine, Slope, Pocahontas No. 3 Seam, 5½ ft. thick.
PO—Big Four, W. Va., SP—Same, (prepay) CTY—McDowell. RR—N. & W. (Main line)
PR—Chas. W. Freeman, Bramwell, W.Va
TR—Jairus Collins, " "
PA—Jairus Collins, " "
EM—W. R. Dudley, " "
EE—J. C. Layman, " "
MS—J. A. Staton....Big Four, W.Va.
S of H—Elec. and Steam loco.; track gauge 44 in.
S of M—Hand and mach.
PP—2 Water tube boilers, 3 Pumps.
EMP—65. Last fiscal year output 68,000 tons.
Sales agency, Smokeless Fuel Co., Cincinnati, O.

KING COAL CO.
King Mine, Slope, Pocahontas No. 3 Seam, 5 to 6½ ft. thick.
PO—Vivian, W. Va., SP—West Vivian, W. Va., CTY—McDowell. RR—Norfolk & Western.
PR—T. King.....Boston, Mass.
TR—T. King, " "
GM—C. H. Boardman..Vivian, W.Va.
GS—Bert C. Hylton, " "
PA—Bert C. Hylton, " "
EM—Bert C. Hylton, " "
MM—W. F. Harris....Kimball, W.Va.
EE—W. F. Harris, " "
MS—S. B. Campbell.
SCO—King Coal Co., " "
Buyer, R. Terry Early, " "
S of H—Mules and 3 Elec. and 1 Storage battery loco.; track gauge 44 in.
S of M—Hand and 5 elec. machines.
PP—6 Return tubular boilers, total 750 H. P., gen. units 250 volts D. C. 2 pumps.
EMP—410. Last fiscal year output 287,121 tons.

KINGWOOD COAL CO.
General Office, North American Bldg., Phila.
Howesville Mine, Drift; Lower Freeport Seam; 4 to 5½ ft. thick.
PO—Howesville, W. Va.; SP—Same; CTY—Preston. RR—W. Va., Northern.
PR—Wm. Atkins.....Phila., Pa.
TR—Wm. Atkins, " "
MS—Isaac Conn....Howesville W. Va.
SCO—Coffman & Fisher Co. " "
S of H—Rope and mules, track gauge 4½ ft.
S of M—6 Comp. air mach.
PP—2 Return tubular boilers total 250 H. P., 2 comp., 3 pumps.
EMP—70. Last fiscal year output 62,000 tons.

KLINEFELTER, J. S. & CO.
General Office, No. 7 Wood St., Pittsburgh, Pa.
Page Mine, Drift, Red Stone and Pittsburgh Seam 54 to 84 in. thick.
PO—McWhorter, W. Va.; SP—Same; CTY—Harrison; RR—B. & O.
PR—H. E. Wentz.....Pittsburgh, Pa.
GM—J. S. Klinefelter, McWhorter, W.Va.
MS—V. O. Eiseman, " "
S of H—Mules.
S of M—1 Elec. mach. and hand.
PP Power purchased.
EMP—60.
Successors to the Hygrade Coal Co.

KOHINOOR COAL & COKE CO.
Kohinoor Mine, Drift, No. 2 Gas Seam, 78 to 90 in. thick.
PO—Craneco, W. Va.; SP—Big Vein, CTY— Logan. RR—C.&O., Guyan Valley Branch.
PR—Harrison Ball..Mahanoy City, Pa.
TR—George Ball.....Minersville, Pa.
GM—Thos. J. Davis, " "
GS—W. W. Beddow....Craneco, W.Va.
PA—W. W. Beddow, " "
MS—Geo. Black, " "
SM—John Irick, " "
CE—Beddow, McCorkle & Wilson.
EE—W. Duncan.....Craneco, W.Va.
S of H—2 Elec. loco., track gauge 44 in.
S of M—3 Elec. mach.
PP—2 Water tube boilers, total 300 H. P., 1 gen. unit, 250 volts D.C.
EMP—100. Last fiscal year output 121,419 tons.
Sales agent, Jewett, Biglow & Brooks, Detroit, Mich.

KROGER GAS COAL CO.
Out of business.

KUNTZ BROS. & MILLER.
Boggs Run Mine.
PO—Wheeling, W. Va.; CTY—Marshall.
No report.

LA BELLE IRON WORKS.
General Office, Steubenville, O.
One mine in Penna, 1 in West Virginia, 1 in Ohio.
La Belle Mine, Drift, Pgh. Seam.
PO—Wheeling, W. Va. SP—Same. CTY—Ohio. RR—B. & O., P. R. R., W. & L. E.
GM—W. D. Crawford..Steubenville, O.
PA—R. M. Rice, " "
EM—J. C. Gibson, " "
MS—R. W. McCasland, " "
S of H—Mules.
S of M—Hand.
PP—Power supplied by the mills.
EMP—26.

LAKE SUPERIOR COAL CO.
General Office, Cannelton, W. Va.
PR—W. C. Franz, Saunt Ste. Marie, Ont.
TR—A. A. Chitty, " " "
GM—W. C. Franz, " " "
GS—F. O. Harris .. Cannelton, W. Va.
PA—F. O.Harris, " "
EM—H. C. Sale.....Superior, W.Va.
MS—J. A. Straughan, " "
SM—Fred Morgan, " "
Sales agents, W. C. Atwater & Co., New York City, N. Y.

Lake Superior No. 1 Mine, Shaft, No. 3, Pocahontas Seam, 3½ to 6 ft.
PO—Superior, W. Va., SP—Same, CTY McDowell; RR—N. & W.
S of H—7 Elec. loco., track gauge 48 in.
S of M—Pick and 4 elec. mach.
PP— 4 Return tubular boilers, total 600 H. P., 2 gen. units 250 volts D. C., 1 air comp. and 3 pumps.
EMP—100. Last fiscal year output 88,234 tons.

Lake Superior No. 2 Mine, Shaft, No. 4 Pocahontas Seam, 3½ to 6 ft. thick.
PO—Superior, W. Va., SP—Same, CTY —McDowell. RR—N. & W.
S of H—5 Elec. loco., track gauge 48 in.
S of M—Pick and 3 elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 air comp. and 2 pumps. Power furnished from No. 1 Mine.
EMP—85. Last fiscal year output 52,192 tons.

LAMBERT RUN COAL CO.
General Office, Fairmont, W. Va.
Clanson Mine; Slope; Pgh. Seam, 84 in. thick.
PO—Meadowbrook, W. Va.; SP—Same, CTY—Harrison; RR—B. & O., Short Line.
PR—C. O. Henry....Fairmont, W.Va.
TR—C. D. Robinson, " "
PA—C. D. Robinson, " "
MS—Dorsey Pope, " "
S of H—1 Elec. loco.; track gauge 36 in.
S of M—4 Elec. mach. and hand.
PP—Power purchased, 4 pumps.
EMP—80. Last fiscal year output 150,000 tons.

LANARK COAL CO.
Lanark No. 4 Mine; Drift, Sewell Seam, 54 in. thick.
PO—Lanark, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O.
PR—John B. Laing....Lanark, W. Va.
GM—John B. Laing, " "
MS—A. E. Easton, " "
S of H—2 Elec. loco.; track gauge 42 in.
S of M—Hand.
PP—2 Return tubular boilers, gen. units 500 volts D. C., 2 pumps.

LATE, GORDON B., COAL CO.
Late No. 1 Mine; Slope, Kittanning Seam, 60 in. thick.
PO—Independence, W. Va.; SP—Hardman, W. Va.; CTY—Preston; RR —B. & O.
PR—Gordon B. Late....Newburg, W.Va.
TR—Gordon B. Late, " "
GM—Gordon B. Late, " "
GS—M. Mannix....Independence, W.Va.
PA—H. B. Newhouse, " "
MM—Travis Chedester, " "
S of H—Mules.
S of M—Hand.
PP—2 Return tubular boilers, total 180 H. P.
EMP—50. Last fiscal year output 20,000 tons.

LATHROP COAL CO.
General Office, Welch, W. Va.
Lathrop Mine, Drift, Bastard, Pocahontas and Splint Seam, 5 ft. 10 in. thick. Operate washery.
PO—Panther, W. Va., SP—Same. CTY —McDowell; RR—N. & W.
PR—William Leckie....Welch, W.Va.
TR—A. E. Jennings, " "
GM—William Leckie, " "
CE—J. Harvey Williams, " "
EM—J. Harvey Williams, " "
GS—A. F. Leckie....Panther, W. Va.
PA—A. F. Leckie, " "
MM—W. R. Talbert, " "
MS—W. R. Talbert, " "
EE—J. H. Parkes, " "
SCO—Lathrop Supply Co., " "
Buyer, R.H. Thomas, Panther, W.Va.
S of H—5 Elec. loco., track gauge 36 in.
S of M—5 Elec. machines.
PP—1 Wicks water tube boiler, 150 H. P. 1 150 K. W. gen. unit, 250 volts D. C., 1 pump.
EMP—100. Last fiscal year output, 160,742 tons.
Sales agency, West Virginia Pocahontas Coal Co.

LAURA MINING CO.
General Office, Glen Jean, W. Va.
Laura Mine, Drift, Sewell Seam, 5½ ft. thick.
PO—Red Star, W. Va., SP—Same, CTY —Fayette. RR—C. & O.
PR—Thomas Nichol..Glen Jean, W.Va.
TR—Thomas Nickol, " "
GM—Thomas Nichol, " "
GS—Thomas Nichol, " "
PA—Thomas Nichol, " "
EM—V. S. Veagly, " "
MS—A. H. Nelson....Red Star, W.Va.
S of H—Rope and mules; track gauge 44 in.
S of M—Hand.
PP—1 Atlas boiler 150 H. P.
EMP—45. Last fiscal year output, 35,000 tons.
Sales agents, C. G. Blake Co., Cincinnati, Ohio.

LAUREL CREEK COAL CO.
Laurel Mine, Drift, Fire Creek Seam, 3½ to 4½ ft. thick.
PO—Laurel Creek, W. Va., SP—Express and prepay freight, Laurel, W. Va., CTY—Fayette. RR—Ches. & Ohio. Laurel Creek Br.
PR—C. C. Beury....Claremont, W. Va.
TR—George Lawton, " "
GM—George Lawton, " "
GS—E. E. Lawton, Laurel Creek, W.Va.
PA—E. E. Lawton, " "
EM—S. H. Bridge.
SCO—Laurel Creek Coal Co. Store, Laurel Creek, W. Va.
S of H—4 Elec. loco., track gauge 44 in.
S of M—Hand and 1 elec. mach.
PP—2 Pumps. Power purchased.
EMP—115. Last fiscal year output 55,000 tons.
Sales Agents, New River Coal Co., Charleston, W. Va.

LECKIE COLLERIES CO.
Nos. 1, 2, 3, 4 and 5 Mines; Drift, Coalburg, Alma, Winifrede, Thacker and Burnwell Seams 42 to 84 in. thock.
PO—Welch, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., Williamson & Paul Cr. Br.
PR—Wm. Leckie.....Welch, W.Va.
GM—Wm. Leckie, " "
TR—A. E. Jennings, " "
EM—J. H. Williams, " "
Asst GM—A. F. Leckie..Panther, W.Va.
PA—W. B. Beale....Williamson, W.Va.
Sales Agency, West Virginia Pocahontas Coal Sales Corp.
Note—Now at work grading and developing plant.

LEHIGH COAL CO. (THE)
General Office, Cleveland, O.
Lehigh No. 1 Mine Drift; Pgh. Seam; 96 to 120 in. thick.
PO—Lowsville, W. Va.; SP—Same; CTY—Monongalia; RR—B. & O., Monon.
TR—C. S. Fenton.....Cleveland, O.
GS—G. B. Hartley..Morgantown, W.Va.
PA—G. B. Hartley, " "
CE—G. B. Hartley, " "
MS—J. W. Dennison..Lowsville, W.Va.
MM—S. A. Dias, " "
S of H—1 Elec. loco.; track gauge 42 in.
S of M—2 Elec. mach.
PP—1 Erie, return tubular boilers, total 150 .H P., gen. unit 250 volts D. C., 1 pump.
EMP—50.
Annual output to be 100,000 tons.

LEWIS COAL & COKE CO.
Lewis Mine, Drift and Slope, Lewiston and Peerless Seams, 4½ ft. thick.
PO—Chelyan, W. Va., SP—Calvin Creek Jct., W. Va., CTY—Kanawha. RR—C. & O.
PR—S. A. Lewis....Chelyan, W. Va.
TR—Dr. L. Prichard Charleston, W.Va.
GM—S. A. Lewis.....Chelyan, W.Va.
GS—W. M. Rollins, " "
PA—W. M. Rollins, " "
SM—W. M. Rollins, " "
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CE—Ronnie & Snider, Charleston, W.Va.
EM—Ronnie & Snider, " "
MM—E. L. Shain....Chelyan, W. Va.
EE—D. W. Cadd, " "
S of H—Mules and 1 elec. loco., track gauge 42 in.
S of M—4 Elec. machines.
PP—1 Pump.

LEWISTON BLOCK COAL CO.
PO—Lewistown, W. Va.; CTY—Kanawha.
No report.

LEX POCAHONTAS COAL CO.
See Long Flame Coal Co.

LINCOLN COAL MINING CORP
General Office, Fairmont, W.Va.
Lincoln Mine; Drift; No. 2 Gas Seam, 54 in. thick.
PO—Big Creek, W.Va.; SP—Same; CTY—Logan; RR—C. & O.; Guyan Valley Branch.
PR—H. J. Hartley, Fairmont, W.Va.
TR—F. B. Pryor, " "
GM—A. W. Hesse, Big Creek, W.Va.
GS—A. W. Hesse, " " "
PA—A. W. Hesse, " " "
EM—A. W. Hesse, " " "
and W. G. Wilkins Co., Huntington, W.Va.
S of H—2 Elec. loco.; track gauge 44 in.
S of M—3 Elec. mach.
PP—Gas engines, 2 gen. units 250 volts D. C., 2 pumps.
EMP—30.

LITZ-SMITH COAL CO.
Eagle Mine; Drift, Eagle Seam, 84 to 90 in. thick.
PO—Accoville, W. Va.; SP—Same, CTY—Logan; RR—C. & O.
PR—A. Z. Litz.....Tazewell, W.Va.
TR—R. R. Smith....Huntington, W.Va.
MS—F. E. Dulancy....Accoville, W.Va.
CE—W. C. McColl, " "
SM—W. E. Corn, " "
S of H—Mules.
S of M—Elec. mach.
PP—Power purchased, 1 pump.
EMP—25.
Sales Agency, Litz-Smith Fuel Co., Huntington, W. Va.
New operation.

LOGAN COAL CO.
Logan Mine; Drift, Winifrede Seam, 54 to 60 in. thick.
PO—Ethel, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Guyan Valley Br.
PR—R. F. Carson....Huntington, W.Va.
TR—J. C. Pack.....Bramwell, W.Va.
GM—L. Epperly.....Ethel, W.Va.
PA—J. C. Hindsley, " "
MS—J. C. Hindsley, " "
EM—J. D. Martin, " "
EE—Lou Davis, " "
SCO—Address the Company, " "
S of H—2 Elec. loco. Track gauge 44 in.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., gen. unit 250 volts D. C., 1 pump.
EMP—100. Lasct fiscal year output 111,565 tons.
Sales Agency, Smokeless Fuel Co.

LOGAN MINING CO.
PR—C.E.Hutchinson, Fairmont, W.Va.
TR—E. C. Curry..... Logan, W.Va.
GM—J. J. Ross, " "
PA—M. C. Lough....Fairmont, W.Va.
EM—B. L. Flynn,.....Logan, W. Va.
Store Buyer, E. M. Jeffreys.
Sales Agents, Hutchinson Coal Co.

Earling Mine, Drift, No. 2 Gas Seam, 5 to 5½ ft. thick.
PO—Manbor, W. Va., SP—Earling, W. Va., CTY—Logan. RR—C. & O., Guyan Valley Br.
MS—R. Lee Hutchinson, Manbor, W Va.
S of H—Mules and 3 elec. loco.; track gauge 44 in.
S of M—5 Elec. mach.
PP—2 Return tubular boilers, total 270 H. P., 1 gen. unit 250 volts D. C., 1 pump.
EMP—108. 10 Bee Hive ovens.
Last fiscal year output, 133,291 tons.

Manitoba Mine, Drift; Chilton Seam; 5 ft. 2 in. thick.
Po—Ethel, W. Va., SP—Same, CTY—Logan. RR—C. & O.
MS—B. L. Flynn.....Ethel, W.Va.
SM—W. A. Mick. " "
S of H—2 Elec. loco., track gauge 44 in.
S of M—4 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—90. Last fiscal year output, 98,549 tons.

Wanda Mine, Drift; Clinon Seam, 4 ft. 6 in. to 5 ft. 4 in. thick.
PO—Ethel, W. Va.; SP—Wanda, W. Va.; CTY—Logan, RR—C. & O. Guyan River Div.
MS—B. L. Flynn.....Ethel, W. Va.
S of H—Mules and 1 Elec. lovo.; track gauge 44 in.
S of M—5 Excel mach.
PP—Power purchased.
EMP—95. Last fiscal year output, 91,635 tons.

Mona Mine; Slope, Cedar Grove Seam, 76 to 84 in. thick.
PO—Monaville, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Main Island Creek Branch.
MS—H. E. Snyder....Monaville, W.Va.
S of H—2 Storage battery loco.; track guage 44 in.
S of M—2 Elec. mach.
PP—1 Return tubular boilers, 150 H. P., gen. units 250 bolts D. C., 3 pumps.
EMP—60. Last fiscal year output 58853 tons.

Rossmore Mine; Slope, Cedar Grove Seam, 80 to 90 in. thick.
PO—Monaville, W. Va.; SP—Same, Rossmore Siding, W. Va.; CTY—Logan RR—C. & O., Main Island Creek Br.
MS—H. E. Snyder....Monaville, W. Va.
S of H—Rope; track gauge 44 in.
S of M—1 Elec. mach.
PP—1 Water tube boilers, 60 H. P., 1 pump.
EMP—25.

LONE JACK MINING CO.
Red Ash Mine; Drift, Douglas or Red Ash Seam, 30 in. thick.
PO—Iaeger, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., Dry Fork Br.
PR—V. T. Strickler.....Iaeger, W.Va.
GM—V. T. Strickler, " "
MS—V. T. Strickler, " "
SM—Chas. E. Harton, " "
TR—J. W. Strickler....Bartley, W.Va.
EM—H. J. Brook.....Welch, W.Va.
S of H—Mules.
S of M—Hand.
Output from November 15 to December 31, 2228 tons.
Sales Agency, The Central West Coal Co., Columbus, O.

LONG BRANCH COAL CO.
No. 2 Mine; Drift, Seam 72 in. thick.
PO—Long Branch, W. Va.; SP—Same; CTY—Fayette;; RR—Virginian, Main Line.
PR—P. M. Snyder....Mt. Hope, W.Va.
TR—L. Graney....Long Branch, W.Va.
GM—L. Graney, " "
SM—W. P. Myers, " "
S of H—2 Gasoline, 2 steam loco.; track gauge 42 in.
S of M—Hand.
Last fiscal year output 130,000 tons.
Sales Agency, Spring Coal Co., Boston, Mass.

LONG FLAME COAL CO.
Long Flame Mine, Drift; Eagle or No. 2. Gas Seam; 6 ft. 8 in. to 8 ft. thick.
PO—Stow, W. Va.; SP—Craneco, W. Va.; CTY—Logan. RR—C. & O., Guyan Valley Branch.
PR—W. J. Pritchard, Bramwell, W.Va.
GM—W. J. Pritchard, " "
TR—E. S. Baker, " "
PA—W. E. Pritchard.....Stow, W.Va.
MS—W. E. Pritchard, " "
SM—Wm. Davis, " "
CE—A. H. Stowe.....Pocahontas, Va.
EM—A. C. Dawson...Accoville, W.Va.
S of H—Mules and 2 Elec. loco.; track gauge 44 in.
S of M—2 Elec. machines.
PP—1 B. & W. water tube boiler total 250 H. P., 250 volts, D. C.
EMP—100. Last fiscal year output, 55,309.45 tons.
Sales Agency, Virginia Coal Co.

LONG, J. E., COAL CO. (THE)
Burke Mine; Drift, Pgh. Seam, 84 to 96 in. thick.
PO—Clarksburg, W. Va.; SP—Same; CTY Harrison; RR—B. & O.
PR—J. Edgar Long....Clarksburg, W.Va.
TR—J. Edgar Long, " "
PA—J. Edgar Long, " "
MS—B. H. Monroe, " "
S of H—Mules.
S of M—Hand.
EMP—30.
Sales Agent, J. Edgar Long, Clarksburg, W. Va.

LOOKOUT COAL & COKE CO.
Lookout Mine; Slope; Sewell Seam, 48 in. thick.
PO—Lookout, W. Va., SP—Same, CTY—Fayette RR—C. & O., Keeney's Creek Branch.
TR—D. W. Boone.....Lookout, W.Va.
GM—D. W. Boone, " "
PA—J. H. Walker, " "
MS—S. J. Bays " "
EE—S. J. Bays, " "
EM—Clark & Krebs, Charleston, W.Va.
SCO—Lookout Coal & Coke Co., Buyer, J. H. Walker, Lookout, W.Va.
S of H—Mules and 8 elec. loco., track gauge 42 in.
S of M—Hand and 4 elec. mach.
PP—Power purchased.
EMP—63.
Sales Agents, C. & O. Coal Agency Co., Boston, Mass.

LORAIN COAL & COKE CO.
Loraine Mine.
PO—Craneco, W. Va.; CTY—Logan.
No report.

LOUISVILLE COAL & COKE CO.
Louisville and Goodwill Mines, Drifts, Pocahontas No. 3 Seam, 4½ to 5½ ft. thick. Operate washery.
PO—Goodwill, W. Va., SP—Same (prepay), CTY—Mercer. RR—N.&W. Bluestone Branch.
PR—Isaac T. Mann..Bramwell, W.Va.
TR—Jairus Collins, " "
GM—Jairus Collins, " "
PA—Jairus Collins, " "
MS—W. H. Martin....Goddwill, W.Va.
EM—W. R. Dudley, " "
SM—J. F. Smith....Goodwill, W.Va.
S of H—Mules and 4 elec. loco., track gauge 44 in.
S of M—Hand and 2 elec. machines.
PP—6 Erie return tubular boilers, total 850 H. P., 2 gen. units 250 volts D. C., 1 Compressor and 2 pumps. Also buy power
EMP—175. Coke ovens, 235 Bee Hive. Last fiscal year output, 128,600 tons.
Sales Agency, Smokeless Fuel Co., Cincinnati, Ohio.

LOUP CREEK COLLIERY CO.
Loup Creek No. 2 Mine; Drift, No. 2 Gas Seam, 54 to 108 in. thick.
PO—Page, W. Va.; SP—Same; CTY—Fayette; RR—Virginian.
GM—J. C. R. Taylor.....Page, W.Va.
PA—J. C. R. Taylor, " "
EM—J. C. Mabe, " "
MM—Mason Smith, " "
MS—D. S. Dooley, " "
SM—J. P. Twohig, " "
S of H—10 Elec., 3 steam loco. and mules; track guage 44 in.
S of M—11 Elec. mach. and hand.
PP—2-200 K. W. 500 volts D. C., gen. driven by 2-2200 volts A. C., 3 phase. Power purchased.
EMP—375; Coke ovens 505 Bee Hive, not in operation.
Last fiscal year output 272,000 tons.
Sales Agency, Eastern Coal & Export Corp., Richmond, Va.

LOW MOOR IRON CO. OF VA.
TR—Guy Du Val....New York, N. Y.
GM—John B. Guernsey..Low Moor, Va.
PA—W. N. Croxton, " "
EM—F. U. Humbert " "
GS—G. H. Esser.....Kay Moor, W.Va.
SM—H. N. Sanford....Low Moor, Va.
Sales Agent, John B. Guernsey, Low Moor, Va.

Kay Moor No. 1 Mine; Drift, Sewell Seam, 42 to 44 in. thick.
PO—Kay Moor, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Main Line.
S of H—4 Elec. loco. and mules; track gauge 44 in.
S of M—3 Elec., 5 comp. air mach. and hand.
PP—1 Atlas, water tube, 4 Erie City, return tubular boilers, total 775 H. P., 2 gen. units, 1-150 K. W., 250 volts D. C., 1-3450 volts A. C., 3 phase, 25 cycles; 1 compressor, 4 pumps.
EMP—250. Coke ovens 130 Bee Hive.
Monthly average output 15,000 tons.

Kay Moor No. 2 Mine; Drift, Sewell Seam, 36 to 44 in. hick.
PO—Fayette, W.Va.; SP—South Fayette, W.Va.; CTY—Fayette; RR—C. & O., Main Line.
MS—G. H. Esser.....Kay Moor, W.Va.
S of H—1 Elec. loco. and mules; track gauge, 30 and 44 in.
S of M—3 Elec. mach.
PP—1 Return tubular boiler 100 H. P. 1 pump. Power from No. 1 Mine.

LOWASH COAL CO.
Lowash Mine; Drift; Big Eagle Seam, 84 in. thick.
PO—Crown, W. Va.; SP—Lac, W. Va.; CTY—Logan; RR—C. & O.
PR—H. B. Summers, Crown, W. Va.
TR—G. I. Putnam, " " "
EM—E. Dawson, " " "
S of H—Mules.
S of M—Elec.

LUELLA COAL & COKE CO.
Luella and Adma Mines; Difts; Kittanning Seam; 60 to 72 in. thick.
PO—Arden, W. Va., SP—Same, CTY—Barbour. RR—B. & O., Belington Branch.
PR—John T. Robinson, Uniontown, Pa.
TR—Wiley L. Byers, " "
GM—Herbert M. Crawford, Phillippi, W Va
GS—Herbert M. Crawford, " "
PA—Herbert M. Crawford, " "
MS—Jas. H. Robinson , , Arden, W.Va.
SCO—Luella Supply Co., Buyer, L. O. Smith, Arden, W.Va.
S of H—Mules, track guage 42 in.
S of M—Hand.
EMP—50. Last fiscal year output 45,000 tons.

LYNCHBURG COAL & COKE CO.
Lynchburg Mine; Drift, Poca. No. 3 Seam, 84 to 108 in. thick.
PO—Kyle, W. Va.; SP—Northfork, W. Va.; CTY—McDowell; RR—N. & W.
PR—L. E. Tierney.....Kyle, W.Va
GM—L. E. Tierney, " "
GS—T. W. Fitzsimmons, " "
EM—G. H. Wilcox, " "
MS—L. J. South, " "
SM—F. M. Junkin, " "
TR—R. H. T. Adams, Jr., Lynchburg, Va.
PA—T. W. Chambers..Eckman, W. Va.
MM—E. B. Stone.....Powhatan, W.Va.
EE—E. B. Stone, " "
S of H—2 Elec. loco.; track gauge 44 in.
S of M Hand.
PP—5 Return tubular boilers, total 575 H. P., 1 compressor, 3 pumps.
EMP—275; Coke ovens 213 Bee Hive.
Last fiscal year output 182,451 tons.
Sales Agency, Crozer, Pocahontas Co., Philadelphia, Pa.

LYNCHBURG COLLIERY CO.
Lynchburg Mine, Drift, No. 2 Gas Seam, 4 ft. thick, and No. 5 Splint Seam, 6 ft. thick.
PO—Vanetta, W. Va., SP—Same, CTY—Fayette. RR—C. & O.
PR—F. P. Christian, Lynchburg, W.Va.
TR—T. A. Deitz.....Vanetta, W.Va.
GM—T. A. Deitz, " "
GS—T A. Deitz, " "
PA—T. A. Deitz, " "
MS—J. C. Grisinger, " "
SM—H. C. Deitz, " "
EM—Philip Konrad, Kanawha Falls, W.Va.
Sof H—Mules and 2 steam loco., track gauge 40 in.
S of M—Elec. mach.
PP—Power purchased.
EMP—150. Last fiscal year output 53,938 tons.

LYNN COAL & COKE CO.
See Houston Coal & Coke Co.

LYNWIN COAL CO.
Lynwin Mine; Drift, Beckley Seam.
PR—C. L. Goodwin....Greensburg, Pa.
TR—P. C. Lynch.....Blue Jay, W.Va.
GM—P. C. Lynch, " "
GS—E. J. Flanagan, Winding Gulf, W.Va.
EM—E. C. Minter, " "
MM—M. B. Flanagan, " "
MS—William Dixon, " "
SM—W. A. Flanagan, " "
S of H—2 Elec., 1 gasoline loco.; track guage 42 in.
S of M—2 Elec. mach.
PP—2 Return tubular boilers, total 225 H. P., gen. units 250 volts D. C.
EMP—110. Last fiscal year output 86,208 tons.
Sales Agency, West Virginia Coal Co., Richmond, Va.

MacALPIN COAL CO.
General Office, Charleston, W. Va.
MacAlpin Mine; Drift; Beckley Seam; 4 to 6 ft. thick.
PO—MacAlpin, W. Va.; SP—Same; CTY—Raleigh; RR—Virginian and C. & O.
PR—John Laing....Charleston, W. Va.
TR—W. T. Green, " "
CE—F. C. Cornet, " "
GM—A. W. Laing....MacAlpin, W.Va.
PA—Lowry Lewis, " "
SM—Lowry Lewis, " "
EM Edward Lewis, " "
MM—J. E. Rosinger, " "
EE—R. A. Cunningham, " "
MS—W. A. Gilchrist, " "
S of H—11 Elec. loco. Track gauge 48 in.
S of M—10 Elec. mach.
PP—4 Houston, Sanwood & Gamble water Tube boilers, total 1000 H. P., gen. units, 250 volts, D. C.
EMP—300.
Sales Agency, New River Coal Co., Richmond, Va.

McCAA COAL CO.
McCaa Mine, Drift, Pgh. Seam, 6½ ft. thick.
PO—Gilmer, W. Va. CTY—Gilmer, RR—C. & C.
MS—B. M. Green....Gilmer, W. Va.
S of M—Hand.
EMP—10. Last fiscal year output 1,195 tons.
State report.

McCOY COAL CO.
McCoy Mine, Slope; "Pittsburg" Seam, 8 to 9 ft. thick.
PO—Fairmont, W. Va. CTY—Marion.
PR—Ernest McCoy, Fairmont, W. Va.
GM—Ernest McCoy, " " "
PA—Ernest McCoy, " " "
TR—Kathryn McCoy, " " "
MS—J. J. Ferrell, " " "
CE—W. Va. Eng. Co. " " "
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—1 pump; power purchased.
EMP—4. Last fiscal year output 1,980 tons.

McDOWELL COAL & COKE CO.
McDowell Mine; Drift; Poca. No. 3 Seam, 60 to 72 in. thick.
PO—McDowell, W.Va.; SP—North Fork, W.Va.; CTY—McDowell; RR—N. & W., North Fork Br.
PR—W. H. Thomas, Bramwell, W.Va.
TR—D. H. Thomas, ...Columbus, O.
GM—H. W. Rawson, McDowell, W.Va.
GS—H. W. Rawson, " "
PA—H. W. Rawson, " "
MS—E. W. Price, " "
EM—C. A. Brown, " "
EE—E. L. Tate, " "
S of H—7 Elec., 1 steam loco. and mules; track gauge 44 in.
S of M—1 Elec. mach.
PP—6 Atlas return tubular boilers, total 850 H.P., 2 gen. units 500 volts D.C., 1 compressor, 2 pumps.
EMP 300. Coke ovens 100 Bee Hive. Last fiscal year output 260,000 tons.
Sales Agency, Flat Top Fuel Co., Bluefield, W. Va.

McGRAW COAL CO.
General Office, Frostburg, Md.
New York Mine, Drift, Pittsburgh Seam, 7 to 12 ft. thick.
PO—Simpson, W. Va. SP—Same. CTY—Taylor; RR—B. & O., Parkersburg Br.
PR—John T. McGraw, Grafton, W. Va.
TR—John Keating, Cumberland, Md.
GM—John S. Brophy,.. Frostburg, Md.
GS—John S. Brophy, " "
PA—Alex. G. Close, " "
EM—G. G. Townsend, " "
EE—A. N. Barnhouse, Simpson, W.Va.
SM—Guy W. Davis, " "
MS—James Smythe, " "
S of H—4 Elec loco. Track gauge 42 in.
S of M—6 Elec. machines.
PP—2 Keeler return tubular boilers, total 300 H. P., 550 volts D. C. 1 pump.
EMP—76. Last fiscal year output, 88,256 tons. Sales Agent, S. J. Bohannon, New York City.

McGREGOR COAL CO.
General Office, Charleston, W. Va.
McGregor Nos. 1, 3 and 4 Mines, Drift, "Winifrede" Seam, 5 ft. 4 in to 7 ft. thick.
PO—Yolyn, W. Va. SP—Slagle, W. Va. CTY—Logan. RR—C. & O., Guyan Valley.
PR—John Laing....Charleston, W. Va.
GM—John Laing, " "
TR—W. T. Green, " "
PA—C. F. Bailey.....Yolyn, W. Va.
MS—C. F. Bailey, " "
SM—C. F. Bailey, " "
CE—A. J. King..Charleston, W. Va.
S of H—Mules and 2 elec. locos. Track gauge 48 in.
S of M—6 elec. mach.
PP—2 Keeler water tube boilers, total 600 H. P., 1 gen. unit, 250 volts D. C., 1 pump.
EMP—125. Last fiscal year output 60,000 tons.
Sales agent, Wyatt Coal Co., Charleston, W. Va.

McKELL COAL & COKE CO.
General Office, Glen Jean, W. Va.
PR—John D. McKell, Chillicothe, O.
TR—William McKell, Glen Jean, W.Va.
GM—Thos. Nichol, " " " "
PA—Thos. Nichol, " " " "
EM—V. S. Veazy, " "
MM—C. P. Gilmore, Kilsyth, " "
CE—T. W. Sprague, ... Boston, Mass.
Sales agency, C. G. Blake Co., Cincinnati, Ohio.

Kilsyth Mine, Drift, Sewell Seam, 4 ft. 4 in. to 6 ft. thick.
PO—Kilsyth, W. Va. SP—K. G., J. Va., CTY—Fayette; RR—K. G., J. & E.
MS—H. H. O'Neal, .. Kilsyth, W. Va.
SM—W. H. Stephenson, " "
S of H—Mules, 6 elec. and 3 storage batteries. Loco. Track gauge 44 inches.
S of M—Hand and 5 Elec. mach.
PP—8 Return tubular boilers, total 1,400 H. P. 2 Gen units, 6,600 volts A. C. 3-phase, 25-cycle and 250 volts D. C.
EMP—302. Last fiscal year output 182,655 tons.

Graham Mine; Drift, Sewell Seam, 52 72 in. thick.
PO—Graham, W. Va.; SP—Same; CTY—Raleigh; RR—K. G. J. & E.
MS—C. C. Wood.....Tamroy, W.Va.
S of H—Elec. loco. and mules.
S of M—Hand.
PP—Power from Kilsyth Mine.
Last fiscal year output 43,415 tons.

Tamroy Mine; Drift, Sewell Seam, 52 to 72 in. thick.
PO—Tamroy, W. Va.; SP—Same; CTY—Raleigh; RR—K. G. J. and E.
MS—C. G. Wood....Tamroy, W. Va.
S of H—10 Elec. loco.; track gauge 44 in.
S of M—3 Elec. mach.
PP—Power from Kilsyth Mine; 7 pumps.
Last fiscal year output 81,931 tons.

Oswald Mine; Drift; Sewell Seam 36 to 66 in. thick.
PO—Oswald, W. Va.; SP—Same; CTY—Raleigh; RR—K. G. J. & E.
MS—W. R. Ballard, .. Oswald, W. Va.
SM—J. W. Francis, " " "
S of H—Mules and 7 elec loco. Track gauge 44 in.
S of M—Hand and 5 Elec. mach.
PP—3 pumps. Power from Kilsyth Mine.
EMP—175. Last fiscal year output 99,513 tons.

Derryhale Mine, Drift, Sewell Seam, 4½ to 6 ft. thick.
PO—Derryhale, W. Va. SP—Same. CTY—Fayette; RR—K. G. J. & O.
MS—J. M. Hastings, Derryhale, W. Va.
SM—W. Wood, " " "
S of H—Mules and 2 elec. loco. Track gauge 44 inches.
S of M—Hand, and 3 elec machines.
PP—3 return tubular boilers, total 150 H. P. 1 Gen. unit 250 volts D. C. 4 pumps.
EMP—100. Last fiscal year output, 56,225 tons.

MADEIRA-HILL-CLARK COAL CO.
General Office, Fairmont, W. Va.
PR—Percy C. Madeira.....Phila, Pa.
TR—Louis C. Madeira, " "
GM—W. R. Wilburn,.....Philipsburg, Pa.
GS—C. J. Adams....Wilsonburg, W.Va.
PA—C. J. Adams, " "
CE—C. O. Messenger, " "
EE—L. L. Waller, Wilsonburg, W.Va.

Waldo and Goff Mines; Drift; Pgh. Seam, 7 ft. thick.
PO—Wilsonburg, W.Va.; SP—Same; CTY—Harrison; RR—B. & O.
S of H—1 Gasoline motor and mules; track gauge 42 in.
S of M—Hand.
PP—Return tubular boiler, 100 H. P.
EMP—108. Last fiscal year output, 194,668 tons.

Randolph Mine; Drift; Pgh.; Seam, 7ft. thick.
PO—Wilsonburg, W. Va.; SP—Same; CTY—Harrison. RR—B. & O.
S of H—2 Elec. loco. and mules; track gauge 42 in.
S of M—5 Elec. and 7 comp. air mach.
PP—3 Return tubular boilers, total 400 H. P. gen. unit 200 K. W., 250 volts D. C., 1 compressor and 6 pumps.
EMP—125. Last fiscal year output, 185,274 tons.

Chiefton Mine idle.

MAGNOLIA COAL & COKE CO.
Magnolia Mine, Drift, Thacker Seam, 4 ft. thick.
PO—Matewan, W.Va..; SP—Same; CTY—Mingo. RR—N. & W.
PR—E. J. Corbett....Detroit, Mich.
PA—E. J. Corbett, " "
TR—J. F. Beavers....Matewan, W.Va.
GM—J. F. Beavers, " "
GS S. T. Lambert, " "
MS—W. H. Artis, " "
SB—A. G. Simpkins, " "
EM—D. M. Good....Williamson, W.Va.
S of H—Mules and 1 Gasoline loco., track gauge 48 in.
S of M—6 Comp. air machines.
PP—2 Boilers, total 250 H. P. 1 air compressor.
EMP—78. Last fiscal year output 27,085 tons.
Sales Agent, E. J. Corbett, Detroit, Mich.

MAHER-PURSGLOVE MINING CO. (THE)
General Office, Cleveland, O.
1 Mine in W. Va., 1 Mine in Ohio.
No. 5 Mine; Drift, Island Creek Seam, 96 to 108 in.
PO—Chauncey, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Logan Div.
PR—Thos. K. Maher....Cleveland, O.
TR—Joseph Pursglove, " "
GM—Samuel Pursglove, " "
GS—David Pursglove..St. Clairsville, O.
PA—Wm. J. Maher....Chauncey, W.Va.
MS—Wm. J. Maher, " "
MM—George W. Johnson, " "
EE—George W. Johnson, " "
SCO—The Maher-Pursblove Store Co. Chauncey, W. Va.
CE—R. A. McCall.....Logan, W. Va
S of H—2 Elec. motors and horses; track gauge 48 in.
S of M—4 Elec. mach.
PP—Power purchased; 3 pumps.
EMP 150.
New operation, first coal loaded March 27th, 1915.

MAIN ISLAND CREEK COAL CO.
General Office, Charleston, W. Va.
Opening 18 mines.
Drift mines; Island Creek Seam 84 to 108 in thick.
PO—Omar, W. Va.; SP—Same;; CTY—Logan; RR—C. & O. L. & S. Br.
PR—John Laing....Charleston, W. Va.
VP—J. F. Johnson, " "
TR—O. O. Cooper.....Hinton, W. Va.
GM—A. J. Dalton.....Omar, W.Va.
PA—John A Kelly, " "
MS—John A. Kelly, " "
EM—J. H. Steidel, " "
MM—W. H. Dower, " "
EE—W. H. Dower, " "
SM—R. A. Barker, " "
CE—R. F. Carson....Huntington, W.Va.
S of H—13 Elec. loco. Track gauge 48 in.
S of M—9 Elec. mach.
PP—2 Boilers, total 600 H. P., 2 gen. units, 250 volts D. C.
EMP—750. Last fiscal year output 500,000 tons.
Sales Agency, Wyatt Coal Co.

MANBAR COAL CO.
Manbar Mine; Drift, No. 2 Gas Seam 60 to 66 in. thick.
PO—Manbar, W. Va.; SP—Same; CTY—Logan; RR—C. & O., G. Va. Br.
PR—H. L. Goodman..Thayer, W. Va.
TR—John K. Simpson....Ashland, Ky.
GM—J. S. Riley.....Manbar, W.Va.
PA—J. S. Riley, " "
EM—W. G. Wilkins Co...Logan, W. Va.
S of H—1 Gasoline loco. and mules; track gauge 48 in.
S of M—2 Elec. mach.
PP—Power purchased, 1 pump.
EMP—38. Last fiscal year output 37,608 tons.
Sales Mgr., J. S. Riley, Manbar, W.Va.

MANLEY & ZEEK COAL CO.
Out of business.

MANUFACTURERS & CONSUMERS COAL CO.
Sold to the Ajax Coal Co.

MARGARET MINING CO.
General Office, Welch, W. Va.
Margaret Mine, Drift, War Eagle No. 1, Seam, 5 ft. thick.
PO—War Eagle, W. Va., SP—Same (prepay) CTY—Mingo. RR—Norfolk & Western.
PR—W. W. Hughes.....Welch, W.Va.
TR—W. W. Hughes, " "
GM—A. H. Dangerfield, Charleston, W.Va.
GS—T. A. Shewey....War Eagle, W.Va.
PA—T. A. Shewey, " "
EM—D. M. Good..Williamson, W.Va.
SCO—War Eagle Supply Co., Buyer, A. H. Moore, War Eagle, W. Va.
S of H—Mules and 1 10-ton steam loco. track gauge 44 in.
S of M—6 compressed air machines
PP—2 Comp., joint power plant with War Eagle Coal Co.
EMP—50. Last fiscal year output 64,000 tons.

MARION GAS COAL CO.
General Office, Greensburg, Pa.
Bingamon Mine, Drift, Fairmont Gas Coal Seam, 7½ ft. thick.
PO—Worthington, W. Va., SP—Enterprise, W. Va., CTY—Marion. RR—B. & O.
PR—Alex. Coulter.....Greensburg, Pa.
TR—J. R. Eisaman, " "
PA—Stanley E. Cook....Greensburg, Pa.
SCO—Marion Supply Co., Worthington, W.Va.
S of H—2 Elec. loco., track gauge 42 in.
S of M—4 Elec. mach. and hand mining
PP—Power purchased.
Sales Agent, H. C. Burkett, Greensburg, Pa.

MARMET COAL CO., (THE)
General Office, Cincinnati, Ohio.
Butler, Black Band, Monarch and Lens Creek Mines, Drifts, Black Band. Cedar Grove and Winifrede Seams, 4 to 4½ ft. thick.
PO—Marmet, W. Va., and Monarch, W. Va., SP—Monarch, W. Va., and Henshaw, W. Va. CTY—Kanawha. RR—K. & M., C. & O., and W. Va. & So.
PR—William Marmet....Cincinnati, O.
TR—Emil Herbrick, " "
GS—W. H. Stroube, " "
PA—Paul Wellinghoff. " "
GM—C. W. Poysell, Receiver, Cincinnati, O.
MS—Thos. Oliver.....Marmet, W.Va.
EM—E. M. Dedlaine, " "
SCO—Marmet Coal Co. Store " "
Marmet Coal Co. Store, Monarch, W.Va.
S of H—9 Elec. loco., track gauge standard.
S of M—26 Elec. machines.
PP—7 boilers, total 800 H. P., 500 volts D. C. 16 Bee Hive coke ovens.
Sales Mngr., C. W. Boysell, Cincinnati, O.

MARSH FORK COAL CO.
General Office Charleston, W. Va.
Marsh Fork Mine, Drift, Coalburg Seam 5 ft. 6 in. to 5 ft. 8 in. thick.
PO—Jarrold's Valley, W. Va.; SP—Marsh, W.Va.; CTY— Raleigh. RR—C. & O. Cabin Creek Branch.
PR—T. E. B. Siler, Charleston, W.Va.
TR—W. H. Pettus, Jarrolds Valley W.Va
GM—W. H. Pettus, " " "
PA—W. H. Pettus, " " "
MS—W. H. Pettus, " " "
SM—R. C. Farrell, Jarrolds Valley, W.Va.
MM—J. F. Blisard, " " "
EE—J. F. Blisard, " " "
EM—E. L. Colcord..St. Albans, W.Va.
S of H—2 Elec. loco., track gauge 42 in.
S of M—3 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P., 250 volts D. C.
EMP—120.
Sales Agent, J. L. Siler, Charleston, W. Va.

MARSHALL COAL CO.
General Office, 731 Land Title Bldg., Philadelphia, Pa.
Marshall Mine, Drift.
PO—Mt. Clare, W. Va. SP—Same. CTY—Harrison. RR—B. &O.
GM—J. E. Wilkinson. Philadelphia, Pa.
PA—J. E. Wilkinson, " "
EM—F. M. McDaniel. Clarksburg, W.Va
MS—J. A. Jenkins. Clarksburg, W.Va.
SM—Marshall Store Co. Buyer, A. M. Ridenour.
S of H—Gasoline motor and mules.
S of M—Comp. air mach.
PP—3 boilers, 1 comp.
EMP—225.

MARVIN COAL CO.
See Stone Mountain Coal Corp.

MARY HELEN COAL COMPANY.
Mary Helen Nos. 1 and 2 Mines, Drift, Winifred and Thacker Seams; 4 to 6 ft. thick; operate washery.
PO—Hatfield, W. Va.; SP—Same; CTY—Mingo. RR—N. & W.
PR—C. E. Wilson.....Crewe, Va.
TR—T. C. Berger....Chattaroy, W.Va.
GM—S. V. Preston, " "
PA—V. D. Clark.....Hatfield, W.Va.
MS—W. H. Kirkpatrick, " "
SM—G. W. Linthicum, " "
EM—N. H. Mannakee, Williamson, W.Va.
S of H—Mules, 5 Elec. loco.; track gauge gauge 48 in.
S of M—5 Elec. mach.
PP—3 Return tubular boilers total 400 H. P., 250 volts, D. C.; 5 pumps.
EMP—125. Last fiscal year output 101,000 tons.
Sales Agent, Elmer Miller Coal Co., Toledo, O.

MARYLAND COAL CO. OF W. VA.
General Office, No. 1 Broadway, New York.
Wendel Mine, Drift, Pittsburgh Seam.
PO—Simpson, W. Va. SP—Flemington, W. Va. CTY—Taylor.
MS—D. Williamson. Flemington, W.Va.
SM—W. W. Powell, " "
S of H—Elec. locos.
S of M—Elec. mach.
PP—3 boilers, 600 H. P., 1 gen. unit, 250 volts D. C.
EMP—300.

MASTELLER COAL CO.
General Office, Keyser, W. Va.
PR—M. Masteller, Fredericksburg, Va.
TR—J. C. Watson.....Keyser, W.Va.
Sec.—G. M. Loy, " "
GM—J. C. Watson, " "
GS—F. H. Tibbetts, " "
PA—J. C. Watson, " "
EM—V. G. Pugh, " "
Sales Agent, Hampshire Mine only. Chas. E. H. Brown, Waynesboro, Pa.

Hampshire No. 1 and No. 2, Drifts, Bakertown Seam, 24 to 48in. thick.
PO—Beryl, W. Va., SP—Hampshire, W. Va., (no agent) CTY—Mineral. RR—Western Maryland, W.Va. Div.
MS—F. H. Tibbetts.....Beryl W.Va.
S of H—1 Baldwin steam loco., and mules, track gauge 42 in.
S of M—Hand.
EMP—70. Last fiscal year output 62,079 tons

New Creek Mine, Drift, Upper Kittanning Seam, 50 to 80 in. thick.
PO—Beryl, W. Va., SP—Hampshire, W. Va., (no agent) CTY—Mineral. RR—Western Maryland, W Va. Div.
MS—F. H. Tibbetts, Beryl, W. Va.
S of H—Mules.
S of M—Hand.
EMP—80. Last fiscal year output 71,226 tons.

M-B COAL & COKE CO.
General Office, Kimberly, W. Va.
PR—J. H. Nash.....Charleston, W.Va.
TR—Alfred S. Clarke..Providence, R. I.
GM—L. C. Tippett....Kimberly, W.Va.
GS—L. C. Tippett, " "
PA—L. C. Tippett, " "
CE—John C. Child...Charleston, W.Va.
MM—Will Robson.....Kimberly, W.Va.
Sales Agent, L. C. Tippett, Kimberly, W. Va.

Elkridge No. 1 Mine, Drift, Incline, Powellton Seam, 5 to 6 ft. thick.
PO—Elkridge W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Powellton Branch.
SM—W. M. Humphreys, Kimberly, W.Va.
S of H—1 elec. loco., mules and gravity; track gauge 44 in.
S of M—8 Elec. mach.
PP—2 Union Iron Works, return tubular, boilers total 300 H. P., gen. unit 500 volts D. C.
EMP—80. Last fiscal year output 85,000 tons.

Kimberly No. 3, Columbia Nos. 4 and 5; Drift, Incline Kanawha No. 2 Gas and Kanawha Splint Block No. 5 Seams 4 to 7 ft. thick.
PO—Kimberly, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Powellton Branch.

SM—F. S. Graves....Kimberly, W.Va.
S of H—1 Elec., 2 gasoline loco., mules and gravity; track gauge 44 in.
S of M—6 Elec. mach. and hand.
PP—2 Jeffrey, return tubular boilers, total 300 H. P., 2 gen. units 500 volts D. C., 1 pump.
EMP—125. Last fiscal year output 10,000 tons.

MEAD-POCAHONTAS COAL CO.
Mine No. 1, Drift, Pocahontas No. 3 Seam, 48 to 56 in. thick.
PO—Mullens, W. Va., SP—Same, CTY—Wyoming; RR—Virginian Ry.
PR—Dr. J. A. Wood..Sullivan, W.Va.
EM—Fred G. Wood, " "
TR—J. C. Sullivan....Mullens, W.Va.
GM—J. C. Sullivan, " "
PA—J. C. Sullivan, " "
MS—Jno. Prentice, " "
SCO—Mead Pocahontas Coal Co.
SM—C. C. Price.....Mullens, W.Va.
S of H—Motor; track gauge 44 in.
S of M—Machine.
PP—50 volts D. C. (power purchased),
EMP—50. Last fiscal year output, 54,000 tons.
Sales Agents, C. & O. Coal Agency Co.

MEAD-TOLIVER COAL CO.
Drift Mine; Beckley Seam, 54 to 90 in. thick.
PO—Maben, W.Va., (Temportry address), SP—Stone Coal, W.Va.; CTY—Wyoming; RR—Virginian, Winding Gulf Br.
PR—J. C. Sullivan, Mullens, W.Va.
TR—C. H. Mead, " "
GM—C. H. Mead, " "
PA—C. H. Mead, " "
EM—Philip Konrad, Kanawha Falls, W.Va.

MEADOW FORK COAL CO.
Meadow Fork Mine, Drift, Sewell or Loup Creek Seam, 3 ft. 10 in. to 6 ft. thick.
PO—Newlyn, W. Va. SP—Meadow Fork. CTY — Fayette. RR—C. & O., Loupcreek Branch.
PR—Edward Thomas..Newlyn, W. Va.
GM—Edward Thomas, " "
MS—Edward Thomas, " "
SM—Edw. A. Thomas, " "
PA—James H. Boyd, " "
EM—James H. Boyd. " "
S of H—Rope and 1 steam loco. Track gauge 44 in.
EMP—60. Last fiscal year output 30,000 tons.
Sales agency, West Va. Coal Co., Richmond, Va., C. C. Blake Coal Co., Cincinnati, Ohio.

MECCA COLLIERY CO.
Diamond, Edgewater, Mecca Gas, and Mecca splint Mines, Drifts.
PO—Eagle, W. Va. SP—Same and Montgomery, W. Va. CTY—Fayette. RR—C. &O.
GM—H. T. Smarr.....Eagle, W. Va.
GS—I. R. Gard, " "
PA—W. H. Carver, " "
MS—(E) J. E. Carver....Eagle, W.Va.
MS—(MC) J. J. Cox..Montgomery, W.Va.
MS—(MS) J. W. Frazier, " "
SM—W. H. Carver, Eagle, W. Va., and N. L. Farell, Montgomery, W. Va.
S of H—Elec. and steam locos.
S of M—Elec. mach.
PP—Gen units, 275 volts D. C.
EMP—300.

MERCHANTS COAL CO.
General Office, Pittsburgh, Pa.
Receivers, Thurston Wright and A. M. Bell, Pittsburgh, Pa.
2 Mines in Penna., 1 Mine in W. Va.
Tunnelton Mine; Drift, Up. Freeport Seam, 54 to 72 in. thick.
PO—Tunnelton, W. Va.; SP—Same; CTY—Preston; RR B. & O., Main Line.
GS—John G. Gibson, Jr., Boswell, Pa.
EM—C. E. Hurd, " "
EE—Thomas Houlton, " "
PA—E. P. Payne.....Pittsburgh, Pa.
CE—John M. Rayburn, " "
MS—W. S. Srodes....Tunnelton, W. Va.
MM—Noble Montgomery, " "
SCO—Penn Mercantile Co., " "
S of H—8 Elec. loco. and mules; track gauge 36 in.
S of M—10 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 3 gen. units 250 volts D. C.
Last fiscal year output 223,000 tons.

MERIDEN COAL MINING CO.
See Lee J. Sandridge Coal Co.

MICHIGAN COAL CO.
Michigan Mine, Drift, Sewell Seam.
PO—Fayette, W. Va. SP—Same. CTY—Fayette. RR—C. & O.
GM—Jas. D. Boone...Fayette, W.Va.
PA—Jas. D. Boone, " "
MS—Jas. D. Boone, " "
SM—Jas. D. Boone, " "
S of H—Mules.
S of M—Hand.
PP—Power purchased.
EMP—80.

MICHIGAN-WEST VIRGINA COAL CO.
General Office, Majestic Bldg., Detroit, Mich.
Drift Mine; Spruce Fork Seam, 60 in. thick.
PO—Sharples, W.Va.; SP—Same; CTY—Logan; RR—C. & O., St. Albans Branch.
PR—Harry P. Jones, ..Detroit, Mich.
TR—R. W. Hartung, " "
Track gauge 48 in.
S of M—Elec. and hand.
PP Central Power plant.

MIDDLE STATES COAL & COKE CO.
See Houston Collieries Company.

MIDLAND COAL & COKE CO.
Midland Mine, Shaft, Freeport Seam, 5 ft. 6 in. to 6 ft. thick.
PO—Philippi, W. Va. SP—Boylen, W. Va. CTY—Barbour. RR—B. & O., Berryburg Branch.
PR—W. P. Hurst.....Scottdale, Pa.
GM—W. P. Hurst, " "
SCO—Midland Supply Co., Phillippi, W. Va.
S of H—1 elec. loco.
S of M—3 elec. mach.
PP—3 water tube boilers, 300 H. P., 1 gen. unit, 250 A. C., 3 pumps.
Coke ovens—101 Bee Hive.
Sales Mgr., W. P. Hurst, Scottdale, Pa.

MIDVALE COLLIERY CO.
Midvale Mine, Drift, No. 5 Splint Seam, 5½ to 7 ft. thick.
PO—Gamoca, W. Va., SP—Same. CTY—Fayette; RR—C. & O., Gauley Br.
PR—C. W. Dillon, Fayetteville, W.Va.
TR—T. A. Deitz.....Gamoca, W.Va.
GM—T. A. Deitz, " "
PA—T. A. Deitz, " "
MS—C. H. Workman, " "
EM—Philip Konrad, Kanawha Falls, W.Va.
SCO—Midvale Store, Buyer, U. G. Thomas, Gamoca, W. Va.
S of H—Mules and 2 gasoline motors, track gauge 44 in.
S of M—Hand and 2 elec. mach.
PP—Power purchased.
EMP—100. Last fiscal year output, 65,000 tons.

MIFFLIN COAL CO.
Mifflin Mine, No. 1, Dirft, No. 2 Gas Seam, 4½ to 6½ ft. thick.
PO—Clothier, W. Va., SP—Same, CTY—Logan. RR— C. & O. Coal River Branch.
PR—S. A. Taylor.....Pittsburgh, Pa.
TR—J. M. Taylor, " "
PA—J. M. Taylor, " "
GM—S. A. Taylor, " "
CE—S. A. Taylor, " "
EM—Romine & Snyder..Charleston, W.Va.
EE—Walter Edwards, Clothier, W. Va.
MS—Martin Long, " "
S of H—Mules and 6 Elec. loco.; track gauge 44 in.
S of M—9 Elec. machines.
PP—Power purchased.
EMP—103. Last fiscal year output, 86,000 tons.
Sales Agency, Producers Coal Co., Cincinnati, Ohio.

MILBURN COAL CO.
Milburn No. 1, Drift, Eagle Seam, 6 to 8 ft. thick.
PO—Milburn, W. Va., SP—Same, CTY—Fayette. RR—C. & O., Paint Creek Branch.
PR—P. M. McClanahan, Charleston, W.Va
TR—P. M. McClanahan, " "
GM—J. H. Morton....Milburn, W. Va.
PA—J. H. Morton, " "
EM—R. B. Whitaker.
MM—C. F. Cole.....Milburn, W.Va.
SM—T. H. Dunbar.....Milburn, W.Va.
S of H—3 Elec. loco., track gauge 44 in
S of M—3 Elec. machines.
PP—2 Return tubular boilers, total 180 H. P., 1 gen. unit 250 volts D. C.
EMP—150. Last fiscal year output, 105,407 tons.

MILL CREEK CANNEL MINING CO.
General Office, Charleston, W. Va.
Villa Mine; Drift; Cannel Seam; 3 to 7 ft. thick.
PO—Villa, W. Va., SP—Milliken, W. Va., CTY—Kanawha. RR—Coal & Coke Ry.
PR—I. C. Goff.....Cleveland, O.
TR—R. B. Taylor, " "
GM—F. M. Wattles, Charleston, W.Va.
PA Fred Wattles, Charleston, W.Va.
GS Fred Wattles, " "
SCO—Fred Wattles, " "
S of H—Mules and 1 steam loco., track gauge 42 in.
S of M—Shooting from solid.
PP—1 water tube boiler, 100 H. P., 1 air comp.
EMP—75. Last fiscal year output 12,000 tons.
Sales Agents, Wattles-Fisher Coal Co., Charleston, W. Va. Goff—Kirby Coal Co., Cleveland, O.

MILL CREEK COAL & COKE CO.
Mil Creek and Tug River Mines, Slope, Poca No. 3 Seam.
PO—Coopers, W. Va. SP—Same. CTY—Mercer. RR—N. & W.
GM—Edw. Cooper....Coopers, W. Va.
PA—Edw. Cooper, " "
EM—J. C. Hindsley, " "
MS—J. W. Johnson " "
MS—H. L. Price, " "
SM—J. C. Campbell, " "
SM—Lewis Straton, " "
S of H—Mules and elec. locos.
S of M—Hand.
PP—9 boilers.
EMP—251.
Coke ovens—215.

MILL CREEK COLLIERY CO.
Mill Creek Mine; Shaft; Sewell Seam, 36 in. thick.
PO—Ansted, W.Va.; SP—Same; CTY—Fayette; RR—C. & O., Hawks Nest Br.
PR—Wm. N. Page,....Ansted, W.Va.
TR—W. H. Evans, " "
GM—W. H. Evans, " "
GS—R. H. Massey, " "
PA—R. H. Massey, " "
MS—R. H. Massey, " "
S of H—Mules.
S of M—12 Elec. mach.
Sales Agency, W. F. Smith Co., Cincinnati, O.

MILLER POCAHONTAS COAL CO.
Drift Mine; Poca No. 3 Seam, 48 to 58 in. thick.
PO—Mullens, W.Va.; SP—Newlest, W. Va.; CTY—Wyoming; RR—Virginian.
PR—Jas. H. Miller, Hinton, W.Va.
TR—L. N. Frantz, ...Mullens, "
CE—Philip Konrad, Kanawha Falls, "
S of H—Elec. loco.
PP—Power purchased.

MINGO WASHED COAL CO.
PO—Eugene, W Va.
PR—Harry Corey.....Eugene, W.Va.
TR—Robt. L. Martin, Jr.,.." "

MODOC COAL MINING CO.
General Office, Bramwell, W. Va.
Modoc Mine, Drift, Pocahontas No. 3 Seam.
PO—Springton, W. Va. SP—Matoaka, W. Va. CTY—Mercer. RR—N. & W.
PR—W. H. Thomas..Bramwell, W. Va.
TR—W. H. Thomas, " "
GM—Eugene Powell, " "
VP—Edward Cooper, " "
SECY—J. B. Perry, " "
SM—N. T. Roberts....McComas, W.Va.
CE—Eugene Powell ..Crystal, W. Va.
S of H—2 elec. locos.
S of M—Hand.
PP—1 gen. unit, 220 volts D. C., power purchased.
Sales agency, Flat Top Fuel Company, Bluefield, W. Va.

MOHAWK COAL & COKE CO.
General Office, Powhatan, W. Va.
Mohawk Mine, Drift.
PO—Mohawk, W. Va.: CTY—McDowell.
GM—L. E. Tierney, Powhatan, W.Va.
PA—J. L. Huddleson....Mohawk, W.Va.
MS—J. L. Huddleson, " "
EM—C. C. Bailey.....Davy, W.Va.
S of H—Mules and Elec. Loco.
S of M—Comp. air mach.
PP—3 Boilers, total 400 H. P. and 1 comp.
EMP—120

MONITOR COAL & COKE CO.
Monitor Mines; Drift; Island Creek Seam; 6 ft. thick.
PO—Wilkinson, W. Va.; SP Monitor Mines, W. Va.; CTY—Logan; RR C. & O.
PR—G. W. Robertson....Shamokin, Pa.
TR—C. K. Robertson, " "
GM Thos. F. Downing, Wilkinson, W.Va.
GS Thos. F. Downing, " "
PA—Thos. F. Downing, " "
CE—W. F. McCall, " "
EM W. F. McCall, " "
MM Chas. Watts, " "
EE—Chas. Watts, " "
SM—Aug. Naggle, " "
S of H—Elec. loco.
S of M—Elec. mach.
PP 4 Boilers, 3 gen units, 250 volts, D. C.

MONONGAH FUEL CO.
Gallihue Mine, Drift, Pgh. Seam 5 to 9 ft. thick.
General Office, Monongah, W. Va.
PO—Monongah, W. Va.; SP—Kilarm; (prepay); CTY Marion. RR—B. & O., Kilarm Br.
PR—David Victor....Fairmont, W. Va.
GM—David Victor, " "
TR—Scott C. Lowe, " "
MS—B. G. Ash....Monongah, W. Va.
SM—Harry B. Killers, " "
S of H—Mules; track gauge 42 in.
S of M—Hand.
EMP—35. Last fiscal year output, 35,190 tons.

MONONGALIA COAL CO.
Drift Mine; Sewickley Seam, 6 ft. thick.
PO—Lowsville, W. Va.; SP—Same; CTY—Monongalia; RR Buckhannon & Northern.
PR—A. P. Brady.....Fairmont, W.Va.
TR—Thos. F. Robey, " "
PA—A. P. Brady, " "
GM—A. P. Brady, " "
CE—S. D. Brady, " "
EM—J. S. Henshaw, " "
S of H—Mules.
S of M—Hand.

MONTGOMERY COAL CO.
Out of business.

MORRIS FORK COAL CO.
General Office, Charleston, W. Va.
Turner Nos. 1 and 2 Mines; Drift, Kanawha; No. 5 Seam, 44 to 52 in. thick.
PO—Heatherman, W. Va.; SP—Turner, W. Va.; CTY—Kanawha RR—C. & C.
PR—J. D. Steele....Charleston, W. Va.
TR—D. F. Payne, " "
GM—W. F. Mandt, " "
GS—J. L. Mandt, " "
CE—J. L. Mandt, " "
EM—George Evans....Longacre, W. Va.
MS—Fred Mandt....Heatherman, W. Va.
EE—Jas. Scott, " "
S of H—1 Elec. loco.
S of M—4 Elec. mach.
PP—2 Return tubular boilers, total 300 H. P., 1 Gen. unit 500 volts D. C.
EMP—75. Last fiscal year output 70,000 tons.
Sales Agency, Indian Run Coal Co.

MOUND COAL CO.
Succeeded by Mound City Coal Co.

MOUND CITY COAL CO.
Mound Mine; Shaft; Pgh. Seam, 64 in. thick.
PO—Moundsville, W. Va.; SP—Same; CTY—Marshall; RR—B. & O.
PR—Renold Ailes....Moundsville, W.Va.
TR—Renold Ailes, " "
GS—R. C. Stuler, " "
PA—R. C. Stuler, " "
MS—Jos. Virgin, " "
S of H—1 Elec. loco.
S of M—4 Elec. mach.
PP—3 Water tube boilers, total 400 H. P.

MT. CARBON CO., LTD.
Chair. Board of Dir., H. C. Newson, London, England.
TR—A. B. Seel, ...London, Eng.
GM—Goodwin H. Powell, Powellton, W. Va.
PA—Goodwin H. Powell, " "
GS—W. Ewart James, " "
EM—W. Ewart James " "
MM—D. S. Mounts, " "
EE—J. Mays, " "
SM—D. Hopkins, " "
Sales Agency, Goodwin H. Powell, Powellton, W. Va.

Vulcan Mine; Drift, Powellton Seam, 60 to 90 in. thick.

Continued on Next Page.

MT. CARBON CO. LTD.—Continued.
PO—Powellton, W. Va.; SP—Same CTY—Fayette; RR—C. & O.
MS—R. Thompson,.. Powellton, W. Va.
S of H—2 Elec. loco. and mules; racy gauge 36 in.
S of M—4 Elec. mach. and hand.
PP—1 Rarig return tubular boilers, 150 H. P.; 2 gen. units 250 volts, D. C., 1 pump.
EMP—60 Coke ovens, 202 Bee Hive; Last fiscal year output 75,447 tons.

Pluto Mine; Drift, Kanawha Gas Seam; 48 to 56 in. thick.
PO—Powellton, W. Va. SP—Same; CTY—Fayette; RR—C. & O., Powellton Branch.
MS—R. Thompson,... Powellton, W. Va.
S of H—1 Elec. loco.; track gauge 42 in.
S of M—1 Elec. mach.
PP—1 Rarig return tubular boiler, 150 H. P.; 2 gen. units 250 volts D. C., 1 pump.
EMP—6; Just developing.

MOUNT HOPE COAL & COKE CO.
Baby Mine, Drift, Sewell Seam, 5 to 6 ft. thick.
PO—Mt. Hope, W. Va., SP—Macdonald, W. Va., CTY—Fayette. RR—C. & O. and Virginian.
PR—W. E. Deegan....Mt. Hope, W.Va.
GM—A. D. Mosely, " "
GS—A. D. Mosely, " "
PA—A. D. Mosely, " "
MM—R. M. Shoemaker, " "
EM—H. B. Turner....Glen Jean, W.Va.
SCO—Peoples Provision Co., Buyer, B. B. Yaple, Mt. Hope W. Va.
S of H—Rope and mules
S of M—Hand.
PP—1 Water tube 100 H. P. boiler, 1 gen. unit, 2 pumps.
EMP—65. Last fiscal year output 72,000 tons.
Sales Agent, S. T. Bailey, Mt. Hope, W. Va.

MULLENS SMOKELESS COAL CO.
PO—Mullens, W. Va.
No report.

NATIONAL BITUMINOUS COAL & COKE CO.
General Office, Charleston, W. Va.
Crown Hill Mine, Drift, Coalburg Seam, 5 to 7 ft. thick.
PO—Crown Hill, W. Va. SP—Hansford, W. Va. CTY—Kanawha. RR—C. & O.
TR—H. B. Stewart....Pittsburgh, Pa.
GM—H. T. Smarr ..Charleston, W.Va.
MS—T. M. LaJord..Crown Hill,W.Va.
SM—C. E. Enbanks, "
S of H—2 elec. locos.
S of M—5 chain breast mach.
PP—2 boilers, total 1,250 H. P., 1 gen. unit, 250 volts D. C.
EMP—110. Last fiscal year output 66,754 tons.

NATIONAL COAL CO.
General Office, 51 S. Gay. st., Baltimore, Md.
National Mine, Drift, Pittsburgh Seam, 6 to 8 ft. thick.
PO—Dola, W. Va., SP—Same, CTY—Harrison. RR—W. Va., Short Line, B. & O. RR.
PR—Augustine J. Ryan ..Baltimore, Md.
TR—Augustine J. Ryan, " "
GM—John F. O'Meara " "
MS—G. J. Goodwin....Grafton, W.Va.
PA—G. J. Goodwin, " "
EM—G. J. Goodwin, " "
SCO—R. T. Williams, " "
S of H—Mules.
S of M—Hand.
EMP—30. Last fiscal year output, 15,660 tons.

NAUGATUCK COAL CO., THE
General Office, Cincinnati, O.
Naugatuck Mine; Drift; Coalburg Seam; 52 in. thick
PO—Blocton, W. Va.; SP—Same; CTY—Mingo; R. N. & W.
PR—H. A. Bayless.....Cincinnati, O.
TR—Froome Morris, "
GM—John S. Crugar....Blocton, W.Va.
GS—John S. Crugar, " "
PA—John S. Crugar, " "
EM—John S. Crugar, " "
MM—L. E. Valentine, " "
EE—L. E. Valentine, " "
MS—C. H. Reid, " "
SM—Jas. H. Varney, " "
S of H—2 Elec. and 1 Steam loco; track gauge, 44 in.
S of M—3 Elec. mach.
PP—3 Return tubular boilers, 450 H. P. gen. units, 250 volts D. C.; 1 air comp., 2 pumps.
EMP—185. Last fiscal year output, 132,000 tons.
Sales Agency, The Blue Ash Coal Co., Cincinnati, O.

NEW CENTRAL COAL CO.
General Office, 17 Battery Place, New York.
Three Mines, 1 in West Va., and 2 in Maryland.
PR—M. Baxter.....New York City
TR—L. L. Hansell, " "
GS—Duncan Sinclair, Fairmont, W.Va.
PA—Duncan Sinclair, " "
EM—C. C. Morfit.....Baxter, W.Va.
MM—Richard Mahaffey, " "

Stafford Mine, Shaft, Pittsburgh Seam, 7 ft. 3 in. thick.
PO—Baxter, W. Va., SP—Same, CTY—Marion. RR—B. & O., Paw Paw Branch.
MS—Thomas Gleason....Baxter, W.Va.
S of H—6 comp. air loco, track gauge 42 in.
S of M—16 comp. air mach.
PP—8 Return tubular boilers, total 1200 H. P., 3 Air comp. and 1 pump.
EMP—145. Last fiscal year output, 186,720 tons.

NEW POCAHONTAS COAL CO.
New Poca Mine; Drift; Pocahonas No. 6. Seam, 36 to 60 in. thick.
PO—Deegans, W. Va.; SP—Same; CTY—McDowell RR—N. & W., Main Line.
PR—W. E. Deegans ...Mt. Hope, W.Va.
TR—J. M. Turner.....Welch, W.Va.
GM—J. W. Wedgewood, " "
CE—G. J. Cooper, " "
EM—G. J. Cooper, " "
MM—J. W. Maherly....Deegans, W.Va.
EE—G. S. Taylor, " "
MS—J. H. Taylor, " "
SCO—New Pocahonas Coal Co., Buyer, T. A. Merrell, Deegans, W. Va.
S of H—3 Elec. and 1 Steam loco; track gauge, 48 in.
S of M—Hand.
PP—2 Erie Water Boilers, total 300 H. P.; 1 gen. unit 250 volts D. C.
EMP—125. Las fiscal year outpu, 50,000 tons.
Sale Agency, Bluefield Coal & Coke Co.

NEWCOMER COAL CO.
General Office, Scottdale, Pa.
Newcomer Mine; Drift, Pgh. Seam, 66 to 78 in. thick.
PO—Teter, W. Va.; SP—Same; CTY—Upshur; RR—B. & O., Buckhannon Br.
PR—W. P. Hurst.....Scottdale, Pa.
TR—R. H. Parker, " "
GM—R. H. Parker, " "
SM—O. F. Hodges, " "
Mine closed, June 15th.

NEWLYN COAL CO.
Thomas Mine, Drift.
PO—Newlyn, W. Va. SP—Thurmond, W. Va. CTY—Fayette. RR—C. & O.
GM—Edward Thomas....Newlyn, W.Va.
PA—James H. Boyd, " "
EM—James H. Boyd, " "
MS—H. P. Thomas, " "
SM—E. A. Thomas, " "
S of H—Mules and rope and Storage battery loco.
S of M—Hand.
PP—Boiler, 25 H. P.
EMP—60.

NEW RIVER CO.
General Office, Macdonald, W. Va.
PR—R. H. Grass.....Boston, Mass.
TR—F. B. Dowst.....Macdonald, W.Va.
GM—S. A. Scott, " "
GM—Asst., P. C. Thomas, " "
PA—M. C. Moore, " "
EM—C. E. Bergendohl, " "
ME—U. U. Carr, " "
CE—Randalph-Means Co., Pittsburgh, Pa.
MM—J. F. Evans.....Carlisle, W.Va.
Sales Agency, White Oak Coal Co., Macdonald, W. Va.

CRANBERRY FUEL CO.
Cranberry Mine; Shaft; Sewell Seam, 48 to 51 in. thick.
PO—Cranberry, W. Va.; SP—Prosperity, W. Va.; CTY—Raleigh; RR—C. & O., Piney Branch.
MS—A. H. Shafer.....Cranberry, W.Va.
SM—E. S. Anderson, " "
S of H—Mules and 3 Elec. loco; track gauge 40 in.
S of M—6 Elec. mach.
PP—Power purchased.
EMP—215. Last fiscal year output, 93,472 tons.

Sprague Mine; Slope; Sewell Seam 46 to 48 in. thick.
PO—Sprague, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O., Piney Br.
MS—W. E. Griffith....Mabscott, W.Va.
SM—Geo Harvey.....Sprague, W.Va.
S of H—Mules and 1 Elec. loco.; track gauge 40 in.
S of M—Hand and 2 Elec. mach.
PP—Purchase power.
EMP—218. Last fiscal year output 101,026 tons.

PRICE HILL FUEL CO.
Price Hill Mine; Shaft; Sewel Seam; 38 to 50 in. thick.
PO—Macdonald, W. Va.; SP—Price Hill, W. Va.; CTY—Fayette; RR—C. & O.; Loup Creek Br.
MS—Bert Wyatt.....Macdonald, W.Va.
SM—M. W. Porter, " "
S of H—Elec. loco. and mule; track gauge 40 in.

STUART COLLIERY CO.
Lochgelly Mine; Shaft; Sewell Seam 46 to 54 in. thick.
PO—Lochgelly, W. Va.; SP—Same; CTY—Fayette; RR—C. & O. and Virginian, White Oak Br.
MS—Jas. L. Osler.....Lochgelly, W.Va.
SM—W. V. Atkinson, " "
S of H—Mules and 8 Elec. loco.; track gauge 40 in.
S of M—Hand and 7 Elec. mach.
PP—Power purchased.
EMP—175. Last fiscal year output 90,318 tons.

Summerlee Mine; Shaft; Sewell Seam; 44 to 55 in. thick.
PO—Summerlee, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., and Virginian, White Oak Br.
MS—Jas. L. Osler.....Lochgelly, W.Va.
SM—C. G. Graham....Summerlee, W.Va.
S of H—Mules and 6 Elec. loco.; track gauge 40 in.
S of M—Hand and 8 Elec. mach.
PP—Purchase power.
EMP—170. Last fiscal year output, 84,400 tons.

MABSCOTT COAL & COKE CO.
Mabscott Mine; Drift; Sewell Seam; 44 to 53 in. thick.
PO—Mabscott, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O., and Virginian, Piney Br.
MS—W. E. Griffith....Mabscott, W.Va.
SM—O. W. Dixon " "
S of H—Rope and 1 Elec. loco; track gauge 42 in.
S of M—Hand.
PP—Purchase power.
EMP—173. Last fiscal year output 98,410 tons.

MACDONALD COLLIERY CO.
Macdonald Mine; Drift; Sewell Seam; 49 to 67 in. thick.
PO—Macdonald, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Loup Br.
MS—John Porter.....Macdonald, W.Va.
SM—Ferd Schernbach, " "
S of H—Mules and 4 Elec. loco.; track gauge 44 in.
S of M—Hand and 7 Elec. mach.
PP—Purchase power.
EMP—185. Last fiscal year output, 95,533 tons.

HARVEY COAL & COKE CO.
Harvey Mine; Dirft; Sewell Seam; 56 to 64 in. thick.
PO—Harvey, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Loup Creek Branch.
MS—John Whitehead.....Harvey, W.Va.
SM—V. W. Moon, " "
S of H—Mules and 4 Elec. loco.; track gauge 44 in.
S of M—Hand and 7 Elec. mach.
PP—Purchase power.
EMP—278. Last fiscal year output 169,263 tons.

DUNN LOOP COAL & COKE CO.
Dunn Loop Mine; Driftl; Sewell Seam; 59 to 76 in. thick.
PO—Dunn Loop, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Loup Creek Br.
MS—John Porter.....Macdonald, W.Va.
SM—A. R. Bebby....Dunn Loop, W.Va.
S of H—Mules and 10 Elec. loco.; track gauge 44 in.
S of M—Hand and 4 Elec. mach.
PP—Purchase power.
EMP—312. Last fiscal year output, 200,546 tons.

COLLINS COLLIERY CO.
Collins Mine; irDft; Sewell Seam; 48 to 58 in. thick.
PO—Glen Jean, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Loup Creek Br.
MS—T. D. Thomas....Glen Jean, W.Va.
SM—E. C. Piper, " "
S of H—Mules and 7 Elec. loco.; track gauge 44 in.
S of M—Hand and 4 Elec. mach.
PP—Purchase power.
EMP—160 Last fiscal year output, 106,606 tons.

BECKLEY COAL & COKE CO.
Beckley Mine; Slope; Sewell Seam; 46 to 50 in. thick.
PO—Wickham, W. Va.; SP—Bickel, W. Va.; CTY—Raleigh; RR—C. & O., and Virginia, Piney Br.
MS—W. E. Griffith....Mabscott, W.Va.
SM—E. H. Mollord, " "
S of H—Rope, Mules and 5 Elec. loco.; track gauge 36 in.
S of M—Hand and 3 Elec. mach.
PP—Purchase power.
EMP—169. Last fiscal year output, 86,859 ton.

PRUDENCE COAL & COKE CO.
Prudence Mine; Drift; Sewell Seam; 48 to 54 in. thick.
PO—Prudence, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., Loup Creek Br.
MS—John Whitehead.....Harvey, W.Va.
SM—W. M. Pifer.....Prudence, W.Va.
S of H—Mule and 5 Elec. loco.; track gauge 44 in.
S of M—Hand and 2 Elec. mach.
PP—Purchase power.
EMP—220. Last fiscal year output, 139,959 tons.

WHITE OAK FUEL CO.
Carlisle Mine; Shaft; Sewell Seam; 40 to 51 in. thick.
PO—Carlisle, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., White Oak Branch.
MS—W. S. Neal.....Carlisle, W.Va.
SM—L. N. Zimmerman, " "
S of H—Mules and 4 Elec. loco.; track gauge 40 in.
S of M—Hand and 7 Elec mach.
PP—Purchase power.
EMP—270. Last fiscal year output, 138,819 tons.

Scarbro Mine; Shaft; Sewell Seam; 47 to 71 in. thick.
PO—Scarbro, W. Va.; SP—Same; CTY—Fayette; RR—C. & O., White Oak Branch.
MS—Jas. Rancaglione....Scarbro, W.Va.
SM—J. W. Wren, " "
S of H—Mules and 14 Elec. loco.; track gauge 40 in.
S of M—Hand and 11 Elec. mach.
PP—Purchase power.
EMP—290. Last fiscal year output, 149,514 tons.
Whipple Mine; Shaft; Sewell Seam; 47 to 55 in. thick.
PO—Whipple, W. Va.; SP—Scarbro, W. Va.; CTY—Fayette; RR—C. & O., White Oak Br.
MS—W. S. Neel.....Carlisle, W.Va.
SM—W. B. Early.....Whipple, W.Va.
S of H—Mules and 7 Elec. loco.; track gauge 44 in.
S of M—Hand and 5 Elec. mach.
PP—Purchase power.
EMP—165. Last fiscal year output, 83,697 tons.

NEW RIVER COLLIERIES CO.
General Office, Sun, W. Va.
PR—F. Guiterman, 165 Broadway, N.Y.
TR—S. R. Ritchie, " " "
GM—F. Guiterman, " " "
PA—J. K. MacGowan, 165 Broadway, N.Y
CE—H. W. Work, " " "
Asst. Gen. Mgr.—F. P. Bayles, Eccles, W.Va
GS—M E. Kent.....Sun, W.Va.
Asst. Supt.—Thos. Donelson, Eccles, W.Va
EM—R. J. Burmeister, " "
MM—C. H. Williams, " "
EE—C. H. Williams, " "
SCO—J. Anthony (Buyer) " "
Sales Agent, O. W. Gardner, Norfolk, Va.

Eccles No. 3 and Eccles No. 5, Shafts, Beckley Seam, 7 ft. thick.
PO—Eccles, W. Va., SP—Same, CTY—Raleigh. RR—C. & O., Piney Br. and Virginian.
MS—Thos. Donelson.....Eccles, W.Va.
S of H—Mules and 15 elec. loco., track gauge 44 in.
S of M—Pick and 11 elec. machines.
PP—2 Heine water tube and 4 Erie City return tubular boilers, total 1000 H. P., 4 gen. units, 3 500 volts D. C., 1 2300 volts A. C., 8 pumps.
EMP—451. Last fiscal year output 482,578 tons.

Eccles No. 6, Shaft, Sewell Seam, 5 to 6 ft. thick.
PO—Eccles, W. Va., SP—Same, CTY—Raleigh. RR—C. & O., Piney Br. and Virginian.
MS—Thos. Donelson....Eccles, W.Va.
S of H—2 elec. loco. and mules, track gauge 44 in.
S of M—Pick. Last fiscal year output 80,472 tons.

Sun Mine, Shaft and Slope, Sewell Seam, 3½ to 6 ft. thick.
PO—Sun, W.Va., SP—Same, CTY—Fayette. RR—Loup Creek Branch, C. & O., K. G. J. & E. R. R.
MS—M. E. Kent.....Sun, W.Va.
S of H—Mules and 9 elec. loco., track gauge 44 in.
S of M—Pick and 7 elec. machines
PP—4 Erie City water tube boilers, total 1200 H. P., 2 gen. units 550 volts D. C., 4 pumps.
EMP—300. 120 Bee Hive coke ovens. Last fiscal year output 386,000 tons.

NEW RIVER AND POCAHONTAS CONSOLIDATED COAL CO.
General Office, Philadelphia, Pa.
PR—John E. Berwind, New York City
TR—E. H. Sanborn, Philadelphia, Pa.
PA—W. W. Whitney, " "
EE—George R. Wood, Philadelphia, Pa.
CS—W. M. Bertolet, Charleston, W.Va.
EM—G. S. Borden, " "
SCO—New River & Pocahontas Stores, Buyer, Bert Atwell Berwind, W.Va.
Sales Agency, Berwind-White Coal Mining Co., Phila., Pa.
Continued on Next Page.

Berwind Mines, Drifts, Pocahontas No. 3 Seam, 3 to 4 ft. thick. Operate washery.
PO—Berwind, W. Va., SP—Same, CTY——McDowell. RR—Norfolk & West.
MS—William Barrick..Berwind, W.Va.
SM—E. M. Homan, " "
S of H—26 Elec. loco., track gauge 44 in.
S of M—Hand and 26 elec. mach.
PP—3 Sterling water tube boilers, total 1500 H. P., 2 gen. units 550 volts D. C., 6 pumps
EMP—700. 200 Bee Hive coke ovens. Last fiscal year output, 504,222 tons.

Havaco Mines Shaft, Pocahontas No. 3 Seam 5 ft. thick.
PO—Havaco, W. Va., SP—Same, CTY—McDowell. RR—Norfolk & West.
MS—O. M. Knouff, Havaco, W. Va.
SM—Walter Evans.....Havaco, W.Va.
S of H—6 Elec. loco. Track gauge 48 in.
S of M—8 Elec. mach. and hand mining.
PP—3 Sterling water tube boilers, total 850 H. P., 2 Gen. units 300 volts D. C., 2 pumps.
EMP—200 Last fiscal year output 14,022 tons.

Minden Mines, Drifts, Sewell Seam, 4 ft thick.
PO—Minden, W. Va. SP—Same. CTY—Fayette. RR—Chesapeake & Ohio.
MS—John Clapperton, Jr., Minden, W. Va.
SM—C. E. Summers, " " "
S of H—27 Elec. loco. Track gauge 42 in.
S of M—21 Elec. machines and hand mining.
PP—4 Sterling water tube boilers, total 1,200 H. P., 300 to 600 volts, D. C., 6 pumps; purchase power.
EMP—1,100. Last fiscal year output, 601,975 tons.

Layland Mines, Drifts, Fire Creek Seam, 4 ft. thick.
PO—Layland, W. Va. SP—Same. CTY—Fayette. RR—C. & O.
MS—Oscar Knerr, ... Layland, W. Va.
SM—James E. Crickmer, " " "
S of H—23 Elec. loco. Track gauge 44 in.
S of M—Hand.
PP—3 Sterling water tube boilers, total 900 H. P. 3 Gen. units 300 volts D. C. 4 pumps.
EMP—375. Last fiscal year output, 303,566 tons.

Weirwood Mines, Shaft, Sewell Seam, 4 ft. thick.
PO—Herberton, W. Va. SP—Weirwood, W. Va. CTY—Fayette. RR—Virginian.
MS—John Clapperton, Jr., Minden, WVa.
SM—F. A. Seward Herberton, " "
S of H—2 Elec. loco.; track gauge 44 in.
S of M—Hand and 3 Elec. mach.
PP—1 Walsh Weidner 100 H. P. boiler. Also purchase power.
EMP—200.

NEW RIVER VALLEY COAL CO.
See River Valley Colliery C.o

NEWTON, J. M. & D. E., COAL CO.
Hartford Mine.
PO—Hartford, W. Va.; CTY—Mason.
No report.

NICHOL COLLIERY CO.
Nichol Mine, Slope, Sewell Seam, 4 to 6 ft. thick.
PO—Glen Jean, W. Va. SP—Same. CTY—Fayette. RR—C. & O., Loup Creek Branch. Virginian & K. G. J. & E.
PR—Thomas Nichol, Glen Jean, W. Va.
TR—O. F. McCoy, " " " "
GM—Thomas Nichol, " " " "
PA—Thomas Nichol, " " " "
MS—Stanley Spoor, " " " "
EM—F. S. Feazy, " " " "
MM—Chas. Watkins, " " " "
EE—Chas. Watkins, " " " "
SCO—Nichol Colliery Company's Store Buyer, .R W. Bayliss, Glen Jean, W. Va.
S of H—4 Elec. loco and conveyor. Track gauge 44 inches.
S of M—4 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P. 2 Gen. units 250 volts D. C. 2 pumps.
EMP—75. Last fiscal year output, 100,000 tons.

NORTH AMERICAN COAL CO. OF W. VA.
Comley Mine, Drift, Pittsburgh and Redstone Seams, 7 and 12 ft. thick.
PO—Morgantown, W. Va. SP—Maidsville, W. Va. CTY—Monongalia. RR—Buckhannon & Northern.
PR—Mr. Brown, New York City, N. Y.
GM—T. E. Thomas, Morgantown, W. Va.
GS—T. E. Thomas, " " "
PA—T. E. Thomas, " " "
CE—C. B. Hartley, " " "
EM—C. B. Hartley, Morgantown, W. Va.
S of H—Mules and incline; track gauge 42 in.
S of M—Pick.
EMP—30. New mine.

NUTTALLBURG SMOKELESS FUEL CO.
Nuttall Mine, Drift, Sewell Seam
PO—Nuttallburg, W. Va. SP—Nuttall, W. Va. CTY—Fayette. RR—C. & O.
PR—Alex McNabb, Nuttallburg, W. Va.
TR—Wm. Brown, " "
GM—Wm. Brown, " " "
GS—Wm. Brown, " " "
PA—Fred Morgan, " " "
SM—Fred Morgan, " " "
MS—F. L. Ramey, " " "
EM—Philip Konrad, Kanawha Falls, WVa.
S of H—Elec. loco and mules.
S of M—Elec.
PP—2 Boilers, total 250 H. P. 550 volts D. C.
EMP—150. Coke Ovens, 50.

OAK FOREST COAL CO.
Oak Forest Mine, Slope, Pittsburgh Seam, 3 ft. 8 in. to 4 ft. 2 in. thick.
PO—Winfield, W. Va. SP—Red House, W Va. CTY—Putnam. RR—K. & M.
PR—C. C. Bowyer, Pt. Pleasant, W. Va.
TR—E. E. Thomas, " " "
GM—D. L. Thomas, Winfield, " "
GS—D. L. Thomas, " " "
PA—D. L. Thomas, " " "
MM—R. G. Thomas, " " "
EE—R. G. Thomas, " " "
EM—M. G. Tyler, Spilman, " "
SCO—Oak Forest Coal Co. Buyer D. L. Thomas, Winfield, W. Va.
S of H—Rope and elec. loco. Track gauge 36 in.
S of M—4 Elec. machines.
PP—1 Return tubular 150 H. P. boiler, 250 volts D. C. 1 pump.

OLCOTT COAL & IRON CO.
Now Black Band Fuel Co.

OLD LICK RUN COAL & COKE CO.
No. 2 Gas Seam 54 in. thick.
PO—Palmer, W.Va.; SP—Same; CTY—Webster; RR—West Virginia Midland.
PR—J. A. Ballinger, Palmer, W.Va.
TR—Ira W. Gruber, " "
GM—L. O. Knipp, " "
PP—Expect to put in electric power

OPPERMAN COAL CO., (THE)
Mine, Drift, No. 2 Gas Seam, 7 ft. thick.
PO—Blair, W. Va. SP—Same. CTY—Logan. RR—St. Alben Branch of C. & O.
PR—J. H. Opperman,.. Cambridge, O.
TR—J. H. Opperman, " "
GM—T. E. Richards,.. Blair, W. Va.
GS—T. E. Richards, " " "
PA—T. E. Richards, " " "
EM—Alfred Thomas.....Blair, W.Va.
S of H—Mules. Track gauge 44 in.
S of M—4 Elec. mach.
PP—250 volts D. C. Power purchased.
EMP—80. Last fiscal year output, 62,770 tons.
Sales Agent, N. O. Gray, Cleveland, O.

OREGON COAL CO.
Oregon Coal Co. Mine, Drift, Welch Seam, 3½ to 5 ft. thick.
PO—Hemphill, W. Va. SP—Welch, W. Va. CTY—McDowell. RR—N. & W.
PR—J. C. Pack.....Freeman, W.Va.
GM—J. C. Pack, "
EM—D. C. Jones, " " "
TR—I. J. Rhodes, Welch, " "
GS—Robt. Watson, Hemphill, " "
PA—H. N. Fix, " " "
SM—H. D. Peters....Hemphill, W. Va.
SCO—Oregon Coal Co. Buyer, N. D. Peter, Hemphill, W. Va.
S of H—Mules. 2 compressed air loco. 1 elec. loco and 1 steam loco. Track gauge 48 in.
S of M—Pick and 10 compressed air machines.
PP—2 Water tube boilers, total 225 H. P. 2 Air compressors. Also buy power.
EMP—225. Last fiscal year output, 90 802 tons.
Sales Agent Pocahontas Fuel Co., New York.

ORINOCO MINING CO.
Orinoco Mine; Drift; Freeburn Seam, 52 to 60 in. thick.
PO—Williamson, W. Va.; SP—Orinoco Siding, W. Va., in Pike City, Ky.; RR—Williamson & Pond Creek.
PR—J. E. Rhodemyre, Williamson, W.Va.
GM—J. E. Rhodemyre, " "
GS—J. E. Rhodemyre, " "
PA—J. E. Rhodemyre, " "
TR—L. A. Dunn.....Bluefield, W.Va.
CE—R. F. Haskins, " "
EM—R. F. Haskins, " "
S of H—Mules (at present); track gauge 48 in.
S of M—Hand.
EMP 60 to 90.
Sales Agency, Bluefield Coal & Coke Co., Bluefield, W. Va.
Expect to ship coal about June 15, 1915.

ORR COAL MINING CO.
General Office,.... Wilsonburg, W. Va.
PR—N. F. Orr.....Reynoldsville, W.Va.
TR—F. B. Cortright, Philadelphia, Pa.
GM—I. A. Boucher....Wilsonburg, W.Va.
PA—H. M. Sipe, " "
GS—H. M. Sipe, " "
SCO—Standard Supply Co., " "
CE—Horner Bros.,.....Clarksburg, W.Va.
Sales agency, Cortright Coal Co., Philadelphia, Pa.

Miller Mine, Drift, Pittsburgh Seam, 7 to 9 ft. thick.
PO—Wilsonburg, W. Va. SP—Same. CTY—Harrison. RR—B. & O.
S of H—Mules and 1 steam loco. Track gauge 42 inches.
S of M—Pick and 2 elec. machines.
PP—Buy power.
EMP—104. Last fiscal year output 67,915 tons..

Phoenix Mine, Slope, Pittsburgh Seam, 6 to 8 ft. thick.
PO—Reynoldsville, W. Va. SP—Same CTY—Harrison. RR—B. & O.
MS—O. P. Kerkendall Reynoldsville, W. Va.
S of H—Rope. Track gauge, 42 in.
S of M—7 Compressed air machines.
PP—2 return tubular boilers, total 300 H. P. 1 air compressor and 3 pumps.
EMP—43. Last fiscal year output, 31,241 tons.

ORR-SHIELDS COAL CO.
Now Fairmont & Clarksburg Coal Co.

OTTO MARMET COAL & MINING CO.
Big Otto Nos. 1, 2 and 3 Mines, Drifts, Pgh. Seam, 6 ft. thick.
PO—Raymond City, W. Va. CTY—Putnam.
GM—Edw. Schonebaum. Raymond City, W. Va.
MS—Edw. Schonebaum, Raymond City, W. Va.
S of H—4 elec. loco. and mules.
S of M—Hand.
EMP—310.

PAGE COAL & COKE CO.
General Office. Philadelphia, Pa.
Nos. 1, 2 and 3 Mines; Drift; Poca No. 3 Seam; 72 to 144 in. thick.
PO—Pageton, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., Tug Fork Branch.
PR—Louis R. Page....Philadelphia, Pa.
TR—Louis R. Page, " "
GM—E. H. Evans " "
GS—E. H. Evans, " "
PA—J. J. Huff, " "
CE—Crozer Land Assn.,..Elkhorn, W.Va.
MM—Samuel Evans.....Pageton, W.Va.
EE—G. B. Harris, " "
MS—J. A. Gallimore and N. T. Hanna, Pageton, W.Va.
SCO—Address the Company, Pageton, W.Va.
S orf H—7 Elec. loco. and mules; track gauge 36 in.
S of M—3 Elec., 4 Comp. air mach.
PP—8 Atlas return tubular boilers, total 1200 H. P.; 2 gen. untis 550 volts D. C.; 2 compressors.
EMP—550. Coke ovens, 454 Bee Hive. Last fiscal year output, 311,285 tons.
Sales Agency, Crozer-Poca Co., Bluefield, W. Va.

PAINT CREEK COLLIERIES CO.
General Office, Scranton, Pa.
PR—Wm. L. Connell.....Scranton, Pa.
PA—H. A. Connell, " "
GM—James Martin....Charleston, W.Va.
GS—James Martin, " "
EM—E. V. Johnson. " "
SCO—Mucklow Supply Co., Buyer, D. C. Flynn, Mucklow, W. Va.
Sales Agent, R. H. Richardson.

Paint Creek and Scranton Mines; Drifts; Coalburg Seam; 4 o 7 ft. thick.
PO—Mucklow, W .Va.; SP—Same; CTY—Kanawha; RR—C. & O., Paint Creek Br.
MS—C. E. Ellis.....Mucklow, W.Va.
S of H—11 Elec. loco.; track gauge 42 in.
S of M—14 Elec. mach.
PP—Boilers, 450 H. P.; gen. units 500 volts D. C.; 1 pump. Power purchased for Paint Creek Mine.
EMP—400.

Wacomah and Banner Mines; Drifts; Coalburg Seam; 5 to 6 ft. thick.
PO—Mucklow, W. Va.; SP—Wacomah, W. Va.; CTY—Kanawha; RR—C. & O., Paint Creek Br.
MS—C. E. Ellis.....Mucklow, W.Va.
S of H—4 Elec. loco.; track gauge 42 in.
S of M—10 Elec. mach.
PP—Boilers, 750 H. P. gen. unit 500 volts D. C.; 3 pumps.
EMP—125 (at Wacomah Mine.)

Grose Mine; Drift; Powellton Seam; 5½ ft. thick.
PO—Tomsburg, W. Va.; SP—Same; CTY Kanawha; RR—C. & O.
MS—John Brunchwyler, Tomsburg, W.Va.
S of H—3 Elec. loco.
S of M—5 Elec. mach.
PP—Boilers, total 300 H. P.; gen. units 250 volts D. C.
EMP 150.

Nuckolls, Greenbrier, Hicker, Camp, Detroit and Morton Mines not being operated.

PANTHER COAL CO.
General Office, Welch, W. Va.
Nos. 1 and 2 Mines; Drifts; Pocahontas, Splint and Red Ash Seams; 36 to 72 in. thick.
PO—Panther, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., Main Line.
PR—Wm. Leckie.....Welch, W.Va.
TR—A. E. Jennings, " "
CE—J. H. Williams, " "
GM—N. F. Leckie.....Panther, W.Va.
MS—L. L. Heaton, " "
PA—L. L. Heaton, " "
MM—Dow Lockhart, " "
EE—Harman Lockhart, " "
SCO—Panther Coal Co., Buyer, Bob Tabor, Panther, W. Va.
S of H—Mule, 4 Elec., and 1 Steam loco.; track gauge 36 in.
S of M—1 Elec. mach.
PP—Wickes Water Tube Boiler, 330 H. P.; gen. units 250 volts D. C.; 1 pump.
EMP—151.
Sales Agent, R. J. Tabor, Panther, W.Va.

PARAGON COAL CO.
Paragon Mine; Drift; Winifred or Thacker Seam, 66 to 84 in. thick.
PO—Yolyn, W.Va.; SP—Same; CTY—Logan; RR—C. & O., River Creek Branch.
PR—C. W. Dillon,
TR—Naaman Jack on,
GM—W. E. Deegans, Mt. Hope, W.Va.
GS—E. C. James, ...Yolyn, W.Va.
PA—E. C. James, " "
MS—J. A. McCallister, " "
MM—J. W. Lusher, " "
EE—J. W. Lusher, " "
CE—W. G. Wilkins Co., Huntington, W.Va.
EM—W. C. McCall, Huntington, W.Va.
S of H—1 Elec. loco.; track gauge 44 in.
S of M—4 Elec. mach.
PP—1 Return tubular boiler, 125 H.P., 2 gen. units 250 volts D.C., 1 pump.
EMP—100. Last fiscal year output 60,000 tons.
Sales Agency, Wyatt Coal Co.

PARDEE & CURTIN LUMBER CO.
PO—Curtin, W. Va. Mine coal for their own use.

Panther Creek Mine, Slope, Seam 4 ft. thick.
PO—Curtin, W. Va. Coal is mined by contract by Jos. Boggs.
S of H—Rope.
S of M—Hand.
PP—1 boiler.
EMP—4. Last fiscal year output 3,000 tons.
Camp No. 21 Mine, Slope Seam 4 ft. thick.
PO—Curtin, W. Va.. Coal is mined by contract by A. W. Smith.
S of M—Hand.
EMP—4. Last fiscal year output, 3,000 tons.

PARRS RUN COAL CO.
Parrs Run Mine, Shaft, Pittsburgh No. 8Seam; 72 in. thick.
PO—Moundsville, W. Va. SP—Same. CTY—Marshall. RR—B. & O.
PR—H. W. Hunter, Moundsville, W. Va.
TR—C. H. Hunter, " "
GM—C. H. Hunter, " "
PA—C. H. Hunter, " "
MS—A. C. Hunt, " "
CE—Alex. Purdy, " "
EM—Alex. Purdy, " "
S of H—Elec. Track gauge 42 inches.
S of M—5 Elec. mach.
PP—2 Water tube boilers, 1 Gen. unit 250 volts D. C.
EMP—125. Last fiscal year output, 81,000 tons.

PATTERSON, S. J.—POCAHONTAS COAL CO.
General Office, Dayton, O.
Arista Nos. 1 and 2 Mines; Drifts: Poca No. 3 Seam, 48 to 60 in. thick.
PO—Arista, W. Va.; SP—Springton, W. Va.; CTY—Mercer; RR—N. & W., Widemouth Br.
PR—S. J. Patterson.....Dayton, O.
TR—H. J. Dreese, " "
GM—R. D. Patterson.....Lowe, W.Va.
MM—L. T. Williams, " "
EE—L. T. Williams, " "

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PATTERSON, S. J., POCAHONTAS COAL CO.—Continued.

GS—J. T. Morris.....Arista, W.Va.
PA—J. T. Morris, " "
CE—J. T. Morris, " "
SCO—Address the Company, Arista, W.Va.
S of H—2 Elec. loco.; track gauge 56½ inches.
S of M—2 Elec. mach.
PP—Gen. units 250 volts D. C.; 1 pump; power purchased.
EMP—50.
Output since November, 1914, 42,007 tons.
Sales Agency, S. J. Patterson Co., Dayton, O.

PAWAMA COAL & COKE CO.

General Office, No. 1 Broadway, New York, N.Y.
Pawama Nos. 1 and 2 Mines; Drift; Poca No. 3 Seam, 54 in. thick.
PO—Matoaka, W.Va.; SP—Same and Glatto, W.Va.; RR—N. & W., Widemouth Br.
PA—J. C. Stras, ...Matoaka, W.Va.
MS—J. C. Stras, " "
EE—J. Lee Bailey, " "
S of H—1 Elec. loco.; track gauge 48 in.
S of M—2 Elec. mach. and hand.
PP—Power purchased.
EMP—105.

PEERLESS COAL & COKE CO.

General Office, Pottsville, Pa.
Peerless Nos. 1 and 2 Mines; Drifts; Pocahontas No. 3 Seam; 68 to 78 in. thick.
PO—Vivian, W. Va.; SP—East Vivian, W. Va.; CTY—McDowell; RR—N. & W., Main Line.
PR—Geo. C. Clausem..New York, N. Y.
TR—E. C. Luther.....Pottsville, Pa.
GM—E. C. Luther, " "
GS—W. G. Williamson....Vivian, W.Va.
PA—W. G. Williamson, " "
MS—T. R. Barrett and Sam Mitchell, Vivian, W.Va.
EM—Wm. C. Morgan, " "
MM—P. J. McAlarms, " "
EE—T. A. Martin, " "
SCO—Address the Company, " "
S of H—6 Elec. loco. and mules; track gauge 44 in.
S of M—Hand.
PP—5 Brownell return tubular boilers; total 750 H. P.
EMP—400. Last fiscal year output, 250,000 tons.
Sales Agency, Crozer Pocahontas Coal Co.

PEMBERTON COAL & COKE CO.

TR—M. K. Watkins....Affinity, W.Va.
GS—G. A. Hinterleitner, " "
PA—G. A. Hinterleitner, " "
ME—C. E. Minter, " "
MM—P. E. Mentz....Affinity, W.Va.
EE—Frank Adams, " "
Sales Agency, Castner, Curran & Buillitt, Phila., Pa.

Affinity Mine, Slope; Beckley Seam, 4 ft. thick.
PO—Affinity, W. Va. SP—Same. CTY—Raleigh. RR—Virginian.
SM—M. E. Cornett Affinity, W.Va.
S of H—4 Elec. loco. Track gauge 44 in.
S of M—3 Elec. mach.
PP—4 Keeler Water tube boilers, total 600 H. P., 1 gen. unit, 250 volts, D. C. 2 pumps.
EMP—80. Last fiscal year output 69,257 tons.

Big Stick Mine, Drift; Beckley Seam, 5½ ft. thick.
PO—Affinity, W. Va. SP—Big Stick, W. Va. CTY—Raleigh.
MS—J. Conner, ... Affinity, W. Va.
SM—H. E. Lushbaugh, " "
S of H—1 Elec. loco and mules. Track gauge 44 in.
S of M—Hand.
PP—3 Water tube boilers, total 450 H. P., 2 pumps.
EMP—112. Last fiscal year output, 190,916 tons.

PEMBERTON FUEL CO.

Pemberton Mine, Drift, Beckley Seam, 48 to 60 in. thick.
PO—Pemberton, W. Va. SP—Same. CTY—Raleigh. RR—Virginia Ry. Co. and C. & O.
PR—P. E. Lilly..Glen Morgan, W.Va.
GM—P. E. Lilly, "
TR—Thos. H. Wickham Beckley, W.Va.
PA—W. I. Smith....Pemberton, W.Va.
MS—Frank Beard, "
MM—K. L. Smith, " "
EE—R. C. Hornbrook, " "
CE—John Hornbrook, Raleigh, W.Va.
EM—John Hornbrook, "
SM—C. H. Meador, " "
S of H—1 Elec. loco., mules and rope. Track gauge 42 in.
Sales agency, C. & O. Coal Agency Co., Richmond, Va., and A. S. Nowlin & Co., Lynchburg, Va.

PEN-MAR MINING CO

Pen-Mar Mine, Drift, Kanawha No. 5 Seam, 4 ft. 8 in. thick.
PO—Big Chimney, W. Va. SP—Pen-Mar, W. Va. CTY—Kanawha. RR—Coal & Coke Ry.
PR—Jacob Householder, (owner). Big Chimney, W. Va.
GM—Jacob Householder, " " " "
MS—S. T. Hoge, " " " "
EM—Arthur E. Wood, " " " "
SCO—Jacob Householder, " " " "
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—10 Last fiscal year output 2740 tons. (Idle several months on account of strike.)

PEYTONA BLOCK COAL CO.

Peytona Mine; Drift; No. 2 Gas Seam; 3½ to 4 ft. thick.
PO—Peytona, W. Va.; SP—Same; CTY—Boone; RR—C. & O.
PR—W. H. Warner.....Cleveland, O.
TR—Whitney Warner, "
GS—John H. Walker....Peytona, W.Va.
PA—John H. Walker, " "
EE—C. F. Schowen, " "
MS—R. A. Snead, " "
SM—F. G. Jones, " "
S of H—Mules; track gauge, 42 in.
S of M—5 Elec. mach.
PP—2 Return Tubular Boilers, total 300 H. P.
EMP—65. Last fiscal year output 42,758 tons.
Sales Agency, W. H. Warner Co., Cleveland, O.

PHILLIPS COAL CO.

Phillips Mine, Drift, Pgh. Seam, 7 to 9 ft. thick.
PO—Fairmont, W. Va. SP—Bentens Ferry. CTY—Marion. RR—B. & O.
GM—James Phillips, Fairmont, W. Va.
S of H—Mules. Track gauge 42 in.
S of M—Hand.
EMP—25. Last fiscal year output, 20,000 tons.

PINEY MINING CO.

General Office, Athens, Ohio.
Mines Nos. 1 2, 3, and 4; Drifts 1, 2 and 4 Beckley Seam, 3 Sewell Seam, 4 to 7 ft. thick.
PO—Stanaford, W. Va. SP—Same. CTY—Raleigh. RR—C. & O.
PR—W. D. Boyer, Scranton, Pa.
TR—S. C. Boyer, Athens, Ohio.
MGR—James Stirrat, Stanaford, W. Va.
PA—James Stirrat, " " "
CE—C. M.—Binaford, " " "
EM—C. M. Binaford, " " "
MM—Chas. Strothers..Stanaford, W.Va
EE—Chas. Strothers, " "
MS—M. P. Campbell, " " "
MS—Frank McClain.....Rily, W.Va.
MS—W. D. Quickmis, " "
SCO—Piney Mining Co. Buyer, C. F. Monroe, Sr., Stanaford, " "
S of H—Mules, 5 elec. and 1 steam loco. Track gauge 44 inches.
S of M—Pick and 2 elec. machines.
PP—6 Return tubular boilers, total 900 H. P., 2 gen. units, 500 volts A. C. 4 pumps.
EMP—450. Last fiscal year output, 280,000 tons.
Sales agency New River & Ohio Coal Co., Charleston, W. Va.

PITTSBURG STEAM COAL CO.

Changed to Connellsville Coal & Coke Co.

PITTSVEIN COAL CO.

General Office, 15 Broad St., New York, N. Y.
Pittsvein Mine; Drift; Pittsburgh Seam; 90 in. thick.
PO—Flemington, W. Va.; SP—Same; CTY—Taylor; RR—B. & O.
PR—L. T. Haggin, New York, N. Y.
TR—H. Esk Moller, " " "
GM—John Delaney, " " "
GS—Geo. S. Brackett, Flemington, W. Va.
PA—Geo. S. Brackett, " "
EM—Geo. S. Brackett, " "
MS—Geo. S. Brackett, " "
MM—Peter Moyer, " "
EE—Peter Moyer, " "
SM—G. S. Goodwin, " "
S of H—3 Elec. loco.
S of M—5 Elec. mach.
PP—2 Erie Iron Works Boilers, total 250 H. P., gen. unit, 250 volts D. C.
EMP—135. Last fiscal year output, 144,012 tons.
Sales Agency, New York Office.

PLYMOUTH COAL & MINING CO.

Plymouth Mine, Drift, Pittsburgh No. 8 Seam, 5½ ft. thick.
PO—Plymouth, W. Va. SP—Same. CTY Putnam. RR—K. & M.
PR—J. F. Thomas.
TR—J. T. Hatfield, .. Covington, Ky.
GM—M. C. Mitchell, Plymouth, W. Va.
GS—M. C. Mitchell, " " "
PA—W. S. Parsons, " " "
MM—John Hackett " " "
EE—W. E. Goodwin, " " "
SM—W. S. Parsons, " " "
S of H—3 Elec and 2 steam loco. Track gauge 30 inches.
S of M—Hand.
PP—2 boilers, 200 H. P. 500 volts D. C.

POCAHONTAS CONSOLIDATED COLLIERIES CO., INC.

General Office, Pocahontas, Va.
24 mines in Virginia and West Virginia.
PR—Isaac T. Mann, Bramwell, W. Va.
TR—L. B. Crawford, Pocahontas, Va.
GM—Jas. Ellwood Jones, Switchback, W. Va.
Asst.
GM—J. C. Turley, ...Pocahontas, Va.
PA—W. D. Garwood, " "
CE—A. H. Stowe, " "
EM—A. H. Stowe, " "
EE—W. A. Bishop, " "
SCO—J. W. Bailey, (Buyer) " "
Asst. Sec, J. W. Graybeal, " "
Gen. Counsel, Geo. W. Woodruff, 1 Bdwy., N. Y.
Sales agency, Pocahontas Fuel Co., 1 Bdwy., New York City.

Caswell Creek Mine, Drift, Pocahontas No. 3 Seam; 108 in. thick.
PO—Freeman, W. Va. SP—Simmons, W. Va. CTY—Mercer. RR—Norfolk & Western, Crane Creek Branch.
MS—R. S. Whitehead..Switchback, W.Va.
SM—H. L. Craft, Freeman, W. Va.
S of H—Mules and elec. track gauge, 44 inches.
S of M—Elec. machines.
PP—Power purchased, 231 Bee Hive coke ovens.

Sagamore Mine, Drift, Pocahontas No. Seam, 5½ ft. thick. Operate washery.
PO—McComas, W. Va SP—Mora, W. Va. CTY—Mercer. RR—Norfolk & Western, Crane Creek Branch.
MS—J. C. Baldwin, McComas, W. Va.
SM—J. M. Bailey, " " "
S of H—Elec. Track gauge 44 inches.
S of M—Elec. machines.
PP—Power purchased. 280 Bee Hive coke ovens.

Norfolk-Angle Mine, Drift, Pocahontas No. 3 Seam, 7 ft. thick. Operate washery.
PO—Maybeury, W. Va. SP—Angle, W. Va. CTY—McDowell. RR—Norfolk & Western, Switchback Branch.
MS—R. S. Whitehead, Switchback, W. Va.
SM—E. L. Harris, Maybeury, W. Va.
S of H—Mules and elec. track gauge 44 in.
S of M—Electric machines.
PP—Buy power. 514 Bee Hive coke ovens.

Lick Branch, Shamokin and Delta Mines, Drifts, Pocahontas No. 3 Seam, 6 to 8 ft. thick.
PO—Switchback, W. Va. SP—Same. CTY—McDowell. RR—Norfolk & Western, Switchback Granch.
MS—R. S. Whitehead, Switchback, W. Va.
SM—E. W. Pearman, " " "
S of H—Mules and elec. Track gauge 44 in. and standard.
S of M—Electric machines.
PP—Power purchased. 667 Bee Hive coke ovens.

Rolfe Mine, Drift, Pocahontas No. 3 Seam, 56 in. thick.
PO—Worth, W. Va. SP—Northfork, W. Va. CTY—McDowell. RR—Norfolk & Western, Northfork Branch.
MS—C. H. Bowers, ...Worth, W. Va
SM—J. E. Noel, " "
S of H—Electric. Track gauge 44 in..
S of M—Electric machines.
PP—Power purchased. 100 Bee Hive coke ovens.

Cherokee Mine, Drift, Pocahontas No. 3 Seam 5 ft. thick. Operate washery.
PO—Ashland, W. Va. SP—Same. CTY McDowell. RR—Norfolk & Western, Northfork Branch.
MS—W. M. Pearman, Ashland, W. Va.
SM—H. F. Hancock, " " "
S of H—Mules and elec. Track gauge standard.
S of M—Electric machines.
PP—Power purchased. 121 Bee Hive coke ovens.

Pocahontas Nos. 6 and 7, Drifts, Pocahontas No. 3 Seam, 9 ft. thick.
PO—Jenkinjones, W. Va. SP—Same CTY—McDowell. RR—Norfolk & Western, Tug River Branch.
MS—C. W. Atkinson, Jenkinjones, W. Va.
SM—J. P. Curtis, " " "
S of H—Electric. Track gauge 44 in
S of M—Electric machines.
PP—Power purchased.

Pocahontas No. 8, Drift, Pocahontas No. 3 Seam, 9 ft. thick.
PO—Jenkinjones, W. Va. SP—Same. CTY—McDowell. RR—Norfolk & Western, Tug River Branch.
MS—C. W. Atkinson, Jenkinjones, W. Va.
SM—D. C. Spangler, " " "
S of H—Electric. Track gauge, 44 in.
S of M—Electric machines.
PP—Power purchased.

Cirrus Mine, Slope, Pocahontas No. 3 and No. 4 Seams, 5 ft. thick.
PO—Big Four, W. Va. SP—Same. CTY—McDowell. RR—Norfolk & Western, Main Line.
MS—R. S. Whitehead..Switchback, W.Va.
SM—R. P. Deyerle, " " "
S of H—Mules and elec. Track gauge 44 in.
S of M—Electric Machines.
PP—Generate own power.

POCAHONTAS DOMESTIC COAL CO.

General Office, 811 Leader Building, Cleveland, Ohio.
Scorpion Mine, Drift, War Creek Seam, 4 ft. thick.
PO—War, W. Va. SP—Same. CTY—McDowell. RR—N. & N., Dry Fork Branch.
PR—W. H. Warner,.... Cleveland, O.
TR—Whitney Warner, " "
PA—K. B. Whitworth, " "
MS—J. D. Nash, War, W. Va.
S of H—1 gasoline motor and 2 elec.
S of M—1 Elec. mach.
PP—1 Erie City return tubular boiler, 100 H. P. 1 Gen. unit 250 volts D. C.
EMP—60. Last fiscal year output, 50,112 tons. Sales Agents, W. H. Warner & Co., Cleveland, O.

POCAHONTAS SMOKELESS COAL CO.

Poca-Smokeless Mine; Drift, No. 6 Poca Seam, 48 in. thick.
PO—Welch, W. Va.; SP—Hemphill, W. Va.; CTY—McDowell; RR—N. & W.
PR—W. E. Deegans....Mt. Hope, W.Va.
TR—J. M. Turner.....Welch, W.Va.
PA—J. M. Turner, " "
GM—J. W. Wedgewood, " "
EM—G. J. Cooper, " "
MS—Wm. Musser, " "
SM—John Bishop, " "
S of H—2 storage battery locos. and mules.
S of M—Hand.
PP—Power purchased.
EMP—100.

POOL-TOWNSHEND COAL CO.

General Office, 324 Rockefeller Bldg., Cleveland, O.
Gilbert Mine; Drift; Pittsburgh Gas Seam; 77 to 108 in. thick.
PO—Rosebud, W. Va.; SP—Same and Dola, W. Va.; CTY—Harrison; RR—B. & O. Short Line.
PR—Chas. E. Pool.....Cleveland, O.
GM—Chas. E. Pool, " "
GS—Chas. E. Pool, " "
PA—Chas. E. Pool, " "
TR—Mason M. Townshend, New York, N.Y.
MS—Omar J. Swiger, Rosebud, W. Va.
S of H—Mules and 1 gasoline loco.; track gauge 42 in.
S of M—Hand.
EMP—45. Last fiscal year output, 47,000 tons.

POTOMAC VALLEY COAL CO.

General Office, Fairmont, W.Va.
PR—John Y. Hite, ..Fairmont, W.Va.
PA—John Y. Hite, " "
TR—Louis Rafetto, Philadelphia, Pa.
EM—H. G. Larew, Jr., Independence, W.Va.
Sales Agency, Hite & Rafetto, Philadelphia, Pa.

Peerless Mine; Drift, Up Freeport Seam, 66 in. thick.
PO—Blaine, W.Va.; SP—Peerless, W. Va.; CTY—Mineral; RR—W.Md.
MS—D. T. Purcell, ..Blaine, W.Va.
S of H—1 Gasoline loco. and mules; track gauge 42 in.
S of M—Hand.
EMP—59. Last fiscal year output 60,000 tons.

Louise Mine; Drift; L. Kittanning Seam, 66 in. thick.
PO—Chaffee, W.Va.; SP—Same; CTY—Mineral; RR—W.Md.
MS—R. H. Wilson, ..Chaffee, W.Va.
S of H—1 Gasoline loco. and mules; track gauge 42 in.
S of M—Hand.
EMP—59. Last fiscal year output 60,000 tons.

POWHATAN COAL & COKE CO.

Mine, Drift, No. 3 Pocahontas Seam, 5 to 7 ft. thick.
PO—Powhatan, W. Va., SP—Elkhorn, W. Va., CTY—McDowell. RR—N. & W.
PR—J. J. Tierney....Powhatan, W.Va.
TR—L. E. Tierney, " "
GM—L. E. Tierney, " "
PA—G. C. Wood, " "
MS—W. T. Betherman, " "
EM—E. B. Stone, " "
EE—E. B. Stone, " "

Continued on Next Page.

SCO—Powhatan Coal & Coke Co., Buyer, P. B. Sleet, " "
S of H—Mules and 4 elec. loco.
S of M—Hand and 4 elec. machines
PP—5 Fire tube boilers, total 750 H. P., 2 gen. units 550 volts D. C. 1 air comp. and 3 pumps.
EMP—500. 225 Bee Hive coke ovens. Last fiscal year output 380,000 tons.
Sales Agency, Crozer-Pocahontas Co.

PREMIER POCAHONTAS COLLIERIES CO.
Premier Poca Mines Nos. 1, 2, 3 and 4, Drifts, Welch and Pocahontas No. 5 Seams, 3 ft. 5 in. to 4½ ft. thick.
PO—Premier, W. Va., SP—Same, CTY—McDowell. RR—Norfolk & West. Spice Creek Branch.
PR—Frank P. Harman..Lynchburg, Va.
TR—Morriss Watts....Eckman, W.Va.
GM—Frank P. Harman, Lynchburg, Va.
GS—J. C. Saunders....Premier, W.Va.
PA—J. C. Saunders, " "
CE—A. H. Bell, " "
EM—A. H. Bell, " "
MM—G. J. Bragg, " "
EE—R. P. Whittaker, " "
SCO—Premier Pocahontas Collieries Co., Buyer, Jos. L. Edwards, Premier,W.Va.
S of H—7 Elec. loco., track gauge 3 ft. 8 in.
S of M—Hand.
PP—4 Erie water tube boilers, 2 gen. units 550 volts D.C.
EMP—375. Last fiscal year otput 319,505 tons.
Sales Agents, Percy Heliner & Son, Philadelphia, Pa.

PRESTON COUNTY COKE CO.
Cascade Nos. 1, 2 and 3, Drifts, Up. Freeport Seam, 6 ft. thick. Washery, Bradford Dry Cleaner.
PO—Cascade, W. Va., SP—Same, CTY—Preston. RR—M. & K.
PR—H. C. Greer..Morgantown, W.Va.
TR—Everhart Bierer....Cascade, W.Va.
GM—Everhart Bierer, " "
GS—Everhart Bierer, " "
PA—A. W. Hauley, " "
EE—Geo. Ramsey, " "
MF—Cylde Marteney, " "
SCO—Preston Co. Sup. Co., " "
Buyer, C. C. Clear, " "
EM—G. B. Hartley, Morgantown, W.Va.
S of H—5 Elec. loco., track gauge 44 in.
S of M—Hand.
PP—4 Atlas water tube, and 2 Erie return tubular boilers, total 700 H. P., 3 gen. units 250 volts D. C.
EMP—210 194 Bee Hive coke ovens. Last fiscal year output, 126,981 tons.

PRESTON FUEL CO.
Preston Mine, Shaft, "Lower Kittanning" Seam, 5 ft. thick.
PO—Independence, W. Va. SP—Same. CTY—Preston. RR—B. & O.
PR—J. B. Irish ...Philadelphia, Pa.
TR—A. E. Clark ..Glen Campbell, Pa.
GM—D. F. C. McGee..Shamokin, Pa.
GS—R. B. Stewart..Independence, W.Va
PA—R. B. Stewart. " "
S of H—Mules. Track gauge 42 in.
S of M—Hand.
PP—2 Heine water tube boilers, total 500 H. P., 2 pumps.
EMP—50.

PULASKI IRON CO.
General Office, Real Estate Trust Bldg., Philadelphia, Pa.
Pulaski Mine; Drift; Pocahontas No. 3 Seam; 6 to 8½ ft. thick.
PO—Eckman, W. Va.; SP—Same; CTY—McDowell; RR—N. & W.
PR—Horace L. Haldeman, Philadelphia, Pa.
TR—Edward P. Borden, " "
GM—Percival Johnson.....Pulaski, Va.
MS—Floyd E. Cunnyngham, Eckman, W.Va.
EM—C. J. Bartels., " "
EE—H. P. Chandler, " "
S of H—3 Elec. loco.; track gauge 44 in.
S of M—3 Elec. mach.
PP—5 Return Tubular Boilers, total 700 H. P.; 3 gen. units 250 volts D. C.
EMP—500. Coke ovens, 260 Bee Hive. Last fiscal year output, 380,371 tons.

QUEEN SHOALS COAL CO.
Burnzwell Mine; Drift; Kanawha No. 5 Seam, 48 in. thick.
PO—Queen Shoals, W. Va., SP—Same, CTY—Clay. RR— C. & C.
PR—W.A.MacCorkle, Queen Shoals,W.Va.
TR—W. R. Morris, " " "
GM—Wm. Price, " " "
PA—W. R. Morris, " " "
MS—H. Y Tucker. " "
SCO—Queen Shoals Coal Co., Buyer W. R. Morris.
S of H—Mules; track gauge 42 in.
S of M—Pick.
PP—None.
EMP—40. Last fiscal year output, 28,512 tons.

QUINCY COAL CO.
Mines Nos. 1 and 2, Drift; "Lewiston" and No. 5 Seam; 3 ft. to 5 ft. thick.
PO—Quincy, W. Va., SP—Dickinson, W. Va., CTY—Kanawha. RR—K. & M.
PR—J. Q. Dickinson..Charleston, W.Va.
TR—J. L. Dickinson, " "
GM—J. L. Dickinson, " "
PA—H. H. Fletcher....Quincy, W.Va.
MS—H. H. Fletcher, " "
SM—H. R. Young, " "
S of H—Mules and 4 Elec. loco.; track gauge 42 in.
S of M—8 Electric machines.
PP—2 Erie return tubular boilers total 300 H. P., 2 gen. units, 250 volts D. C.
EMP—100. Last fiscal year output 75,000 tons

QUINNIMONT COAL CO.
General Office, Quinnimont, W. Va.
Big Q. and Lick Branch Mines, Drifts, Fire Creek Seam.
PO—Lawton, W. Va., SP—Big Q., W. Va., CTY—Fayette. RR—C & O.
GM—John C.Gallaudet, Quinnimont,W.Va
PA—W. D. Rader.....Lawton, W.Va.
EM—S. H. Bridge, Quinnimont, W.Va.
SM—C. S. Moss.....Lawton, W.Va.
EE—J. W. Merritte " "
MF—Ed. Gordon, " "
S of H—Elec. loco.
S of M—Elec and hand mining.
PP—250 volts D. C., and 2000 volts A. C. 3 boilers.
EMP—275

RALEIGH COAL & COKE CO.
PR—John M. Wright.....Cincinnati, O.
TR—H. V. Stephenson....Raleigh, W.Va.
PA—H. V. Stephenson, " "
GM—Ernest Chilson " "
EM—John R. Hornbrook, " "
GS—Jas. P. White, " "
MM—P. M. Anderson, " "
EE—R. B. Holmes, " "
SCO—Address the Company, " "
Sales Agency, (Eastern) C. & O. Coal Co., Boston, Mass.; (Western) Raleigh Coal & Coke Co., First National Bank Bldg., Cincinnati, O.

Nos. 1, 2 and 4 Mines; Drift; Beckley Seam; 65 to 165 in. thick.
PO—Raleigh, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O., Piney Br., Virginian.
S of H—4 Elec. loco.; track gauge 44 in.
S of M—2 Elec. mach. and hand.
PP—Power purchased; 5 pumps.
EMP—68. Last fiscal year output, 84,000 tons.

Nos. 3 and 6 Mines; Drift; Beckley Seam, 66 to 168 in. thick.
PO—Raleigh, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O., Piney Br., Virginian.
S of H—15 Elec. loco.; rack gauge 44 in.
S of M—10 Elec. mach.
PP—Power purchased; 16 pumps.
EMP—421. Last fiscal year output 417,000 tons.

No. 5 Mine; Drift, Beckley Seam, 48 to 60 in. thick.
PO—Raleigh, W. Va.; SP—Mahscott, W. Va.; CTY—Raleigh; RR—C. & O., Piney Br., Virginian.
S of H—Mules.
S of M—Hand.
PP—Power purchased; 2 pumps.
EMP—35. Last fiscal year output, 20,300 tons.

RED. JACKET. CONSOLIDATED. COAL & COKE CO., Inc.
General Office, Red Jacket, W. Va.
PR—Isaac T Mann..Branwell, W.Va.
TR—C. A. Fischer..Red Jacket, W.Va.
GS—Wm. N. Cummins, " "
PA—E. K. Bickner, " "
EM—J. H. Dickerson, " "
MM—E. L. Spriegel, " "
SCO—Red Jacket Store, Grapevine Store and Mitchell Branch Store.

Mitchell Branch and Red Jacket Mines. Drifts; Lower Kittanning Seam; 48 to 66 in. thick.
PO—Red Jacket, W. Va., SP—Same, (prepay) CTY—Mingo. RR—Norfolk & Western, Mate Creek Br.
MS—W. A Wilson, Red Jacket, W. Va.
S of H—Mules and 14 elec. loco., track gauge 48 in.
S of M—14 Elec. machines.
PP—2 Wickes water tube boilers, total 800 H P., 1 gen. unit 250 volts D. C.

Grapevine Mine; Drift; Lower Kittanning Seam; 72 in. thick.
PO—Edgarton, W. Va., SP—Delorme, W Va., CTY—Mingo. RR—Norfolk & Western, Main Line.
MS—W. A Wilson..Red Jacket, W.Va.
S of H—Mules, track gauge 48 inches.
S of M—Elec. mach.

RED JACKET, JR., COAL CO.
Red Jacket Nos. 1 and 2 Mines; Drift; L. Kittanning Seam; 42 in. to 60 in. thick.
PO—Red Jacket, W. Va.; SP—Same; CTY—Mingo; RR—N. & W.
PR—W. M. Ritter.....Columbus, O
TR—C. A. Fischer....Red Jacket, W.Va.
GS—Wm. M. Cummins, " "
PA—E. K. Becker, " "
MS—W. A. Wilson, " "
EM—J. H. Dickerson, " "
MM—E. L. Speigel, " "
SM—J. D. McDonough, " "
S of H—Elec. loco.
PP—Houston Stanwood & Gamble Boiler
Sales Agency, Norfolk & Chesapeake Coal Co., Detroit, Mich.

RED ROCK FUEL CO.
General Office, Fairmont, W. Va.
Red Rock No. 1 and 2 Mines, Drift; Red Stone Seam, 4 to 4½ ft. thick
PO—Red Rock, W Va.; SP—Same; CTY—Upshur. RR—B. & O.
GS—H. S. Reppert,.Buckhannon, W.Va
PA—H. S. Reppert, " "
MS—Wm. Reppert, Red Rock, "
SM—Oscar Jones, " "
EE—J. R. Fordyce....Red Rock, W. Va.
S of H—4 Elec loco., track gauge 42 in
S of M—7 Elec. machines.
PP—1 Erie return tubular boiler, total 150 H. P., 1 gen. unit, 250 volts, D. C, 2 pumps.
EMP—100. Last fiscal year output, 60,500 tons.

REPUBLIC COAL CO.
No. 1 Mine; Drift; No. 2 Gas Seam, 50 to 54 in. thick.
PO—Carbon, W. Va.; SP—Republic, W. Va.; CTY—Kanawha; RR—C. & O.
PR—C. A. Cabell.....Carbon, W.Va.
TR—C. A. Cabell, " "
GM—C. A. Cabell, " "
GS—J. R. Johns, " "
MS—M. H. Hall, " "
CE—J. C. L. Harris, " "
EM—K. M. Zurickle, " "
Auditor—E. C. Hanna, " "
SM—L. F. McGhee, " "
S of H—2 Elec. loco.
S of M—2 Elec. mach.
PP—Power purchased; 1 pump.
EMP—100. Last fiscal year output, 60,000 tons.
Sales Agency, Carbon Fuel Co., Traction Bldg., Cincinnati, O.

REX COAL & COKE CO.
Rex Mine, Drift, Winfrede Seam, 4 ft. 9 in. to 5 1-3 ft. thick
PO—Ethel, W. Va., SP—Same, (prepay) CTY—Logan RR—C. & O. RR., Guyan Valley Branch.
PR—J. B. Neal.....Rock, W.Va.
TR—T. O. Deaumer.....Ethel, W.Va.
GM—T. O. Deaumer, " "
PA—T O. Deaumer, " "
EM—T. O. Meaumer, " "
SM—Wylie Agnew, " "
S of H—Mules and 1 elec. loco., track gauge 44 in.
S of M—5 Elec. and 3 comp air mach.
PP—2 Atlas and H. S. & G. boilers, total 300 H. P., 1 gen unit 250 volts D. C., 1 air comp. and 3 pumps.
EMP—105. Last fiscal year output, 123,000 tons.
Sales Agent, Producers Coal Co., Cincinnati, O.

RICH CREEK COAL CO.
General Office, Logan, W. Va.
Wilburn Mine; Drift; Cumb ll's Creek No. 2, Gas Seam; 56 in. to 63 in. thick.
PO—Manbar, W. Va.; SP—Wilber, W. Va.; CTY—Logan; RR—C. & O., Guyan Valley Br.
PR—J. J. Ross.....Logan, W.Va.
PA—E. M. Jeffrey, " "
EM—B. L. Flynn, " "
TR—B. Lee Hutchinson...Manbar, W.Va.
MS—Frank E. Hutchinson, " "
SCO—Rich Creek Coal Co, Buyer, E. M. Jeffrey, Logan, W. Va.
S of H—1 Elec. loco; track gauge 44 in.
S of M—2 Elec. mach.
PP—Purchase power.
EMP—50. Last fiscal year output, 75,000 tons.
Sales Manager, C. E. Watkins, Manbar, W. Va.

RICH MOUNTAIN COAL CO.
Mines abandoned.

RICHLAND BLOCK COAL CO.
General Office, Wheeling, W. Va
Beech Bottom Mine, Drift, 5 ft. 4 in. thick.
PO—Short Creek, W. Va. SP—Same. CTY— Brooke RR—P. C. C. & St. L.
PR—J. C. McKinley...Wheeling, W.Va.
TR—J C. McKinley " "
GM—J. C. McKinley, " "
MS—J. P. Leonard..Short Creek, W.Va.
S of H—5 Elec. loco., track gauge 42 in.
S of M—6 Elec. machines.
PP—500 volts D. C., (Power purchased)

RICHLAND COAL CO.
Richland Mine, Drift, 5½ ft. thick
PO—Wheeling, W. Va., SP—Same, CTY—Ohio. RR—P. C. C & St. L.
PR—J. C. McKinley...Wheeling, W.Va.
TR—J C. McKinley " "
GM—J. C. McKinley, " "
GS—L. W. Broan, " "
EM—P C Cleary, " "
S of H—5 Elec. loco., track gauge 36 in.
S of M—13 elec. machines
PP—500 volts D. C. (Central power sta.)

RIDGEVIEW COAL CO.
General Office, Charleston, W. Va.
Ridgeview Mine, Drift, Fire Creek Seam, 3 ft. 4 in. to 4 ft. thick.
PO—Thayer, W. Va., SP—Same, CTY—Fayette RR—C & O
PR—G. T. Thayer..Charleston, W.Va.
TR—H. B. Clarkson....Thayer, W.Va.
GM—H. B. Clarkson, " "
GS—H B. Clarkson, " "
PA—H. B. Clarkson, " "
SM—J. A. Deeds, " "
EM—S. H. Bridge, Quinnimont, W.Va.
S of H—Mules, rope and 1 steam loco., track gauge 40 in.
S of M—Hand.
PP—1 Return tubular 125 H. P. boiler, 1 gen. unit 150 volts D. C.
EMP—50. Development work production small. Last fiscal year output 8000 tons.
Sales Agents, West Virginia Coal Co.

RIDGEWOOD COAL CO.
Ridgewood Mine, Drift, Coalburg Seam, 3½ to 4 ft. 5 in. thick.
PO—Vaughan, W. Va. SP—Greendale, W. Va., CTY—Nicholas. RR— C. & O., Gauley Branch.
PR—R. D. O'Shaughnessy, Chicago, Ill.
GM—R. D. O'Shaughnessy, " "
TR—R. W. Walsh, " "
PA—J. H. Hubbell....Vaughan, W.Va.
EE—Ed May, " "
SM—J H. Hubbell, " "
S of H—Mules and 1 elec. loco., track gauge 42 inches.
S of M—3 Elec. machines.
PP—2 Return tubular boilers, 1 gen. unit 250 volts D. C.,
EMP—90.
Sales Agents, R. W. Walsh & Co., Chicago, Illinois.

RIGHTER COAL & COKE CO.
Righter Mine, Drift, Redstone & Pittsburgh Seams, 4½ to 6½ ft. thick.
PO—Lost Creek, W. Va. SP—Same.CTY Harrison. RR—B. & O.
PR—A. C. Leisenring, Lost Creek, W.Va.
TR—Henry Gordon. " "
GM—A. C. Leisenring, " "
PA—A. C. Leisenring, " "
GS—W. H. Sandridge, " "
EE—W. G. Sutton, " "
CE—D. D. Britt, Clarksburg, W.Va.
EM—D. D. Britt, " "
SCO—Righter Store.
Buyer, W. S. Morgan, " "
S of H—Mules and 2 gasoline motor. track gauge 42 in.
S of M—Hand.
PP—2 pumps.
EMP—100 Last fiscal year output 112,799 tons.

RIVER VALLEY COLLIERY CO.
Bachman Mine, Drift, Sewell Seam, 3½ ft. thick.
PO—Hawks Nest, W. Va., SP—Bachman, W. Va., CTY—Fayette RR—C. & O.
PR—D W. Boone.....Lookout, W.Va.
TR—W. F. Boone..Ronceverte, W.Va.
GM—D. W. Boone.....Lookout W.Va.
EM—Clark & Krebs, Charleston, W.Va.
MS—S. J. Rays....Hawks Nest, W.Va.
SM—M. D. Hinton..Hawks Nest, W.Va.
S of H—Mules and 1 Elec. loco.; track gauge 42 in.
S of M—3 Elec. machines.
PP—1 boiler, 500 volts D. C.
EMP—45 Last fiscal year output, 15,000 tons.
Sales Agency, C. & O. Coal Agency Co. Boston, Mass.

ROANOKE COAL & COKE CO.
Roanoke Mine, Drift, Pocahontas No. 3 Seam, 4½ to 5 ft. thick.
PO—Worth, W. Va. SP—Crumpler, W. Va., CTY—McDowell RR—N. & W., North Fork Branch.
PR—Isaac T. Mann..Bramwell, W.Va.
TR—C. A. Fischer..Red Jacket, W.Va.
GS—Hanry Brooke.....Worth, W.Va.
PA—Henry Brooke, " "
EM—Henry Brooke, " "
MM—J. N. Preston, " "
EE—J. N. Preston, " "
SM—R. C. Mastin, " "
S of H—Mules and 3 elec. loco., track gauge 44 in.
S of M—Hand and 1 elec. mach.
PP—3 Water tube boilers, 250 K. W., 2 gen. units 250 volts D. C.
Sales Agency, Pocahontas Fuel Co., Bluefield, W. Va.

ROBINSON COAL CO.
James Mine, Pittsburgh Seam; 5 ft. thick.
PO—Fairmont, W. Va.; SP—Same; CTY ——Marion. RR—B. & O.
PR—H. P Robinson, Fairmont, W.Va.
GM—H. P. Robinson, " "
PA—H. P. Robinson, " "
MS—P. Horker, " "
S of H—Mules, track gauge 36 in.
S of M—Hand.
Last fiscal year output 20,000 tons.

ROCK LICK COAL CO.
General Office, Staunton, Va.
Nos. 1 and 2 Mines, Drift, Sewall and Fire Creek Seam, 3 ft. to 4½ ft. thick.
PO—Concho, W. Va. SP—Same. CTY Fayette. RR—C. & O., South Side Branch.
PR—H. B. Sproul.....Staunton, Va.
GM—H. B. Sproul, " "
TR—A. Erskine Miller, " "
PA—Gilbert Smith .....Concho, W.Va.
EM—Gilbert Smith, " "
MS—Gilbert Smith, " "
MM—H. E. Koehm, " "
SM—E. A. Murdock, " "
S of H—4 Elec. loco. and mules; track gauge 44 in.
S of M—2 elec. mach. and hand.
PP—Purchase power.
EMP—200. Last fiscal year output, 93,000 tons.

ROSEBUD FUEL CO.
General Office, Fairmont, W. Va.
Rosebud No. 1 and No. 2, Drifts, Pittsburg Seam 7 to 9 ft. thick.
PO—Rosebud, W. Va., SP—Same, CTY —Harrison RR—B. & O.
PR—W. E. Watson, Jr., Fairmont, W.Va.
TR—J. F. Straight, " "
GM—W. E. Watson, Jr. " "
EM—West Virginia Eng. Co., " "
MS—H. I. Conner.....Rosebud, W.Va.
SCO—Rosebud Fuel Co. Store
SM—M. C. Tennant, " "
S of H—2 Elec. loco., track gauge 42in
S of M—2 Elec. mach. and 7 comp. air mach.
PP—2 Erie return tubular boilers, total 250 H. P., 1 gen. unit 250 volts D. C, 1 air comp. and 4 pumps.
EMP—130

ROSEMONT COAL CO.
General Office, Land Title Bldg., Philadelphia, Pa.
Rosemont Mine; Drift; Pgh. Seam; 96 in. thick.
PO—Rosemont, W. Va.; SP—Flemington, W. Va.; CTY—Taylor; RR—B. & O., Main Line.
PR—J. H. Weaver.....Philadelphia, Pa.
TR—J. E. Wilkinon, " "
PA—J. E. Wilkinon, " "
GS—Jas. A. Jenkins...Clarksburg, W.Va.
EM—F. C. McDaniel, " "
MS—Jas. A. Haislip...Rosemont, W.Va.
MM—Thos. Hamrick " "
EE—Thos. Hamrick, " "
SCO—Rosemont Store, " "
S of H—3 Elec. loco.; track gauge 42 in.
S of M—4 Elec. mach.
PP—2 Meadville water tube boilers, total 300 H. P.; 2 gen. units 250 volts D. C.
EMP—275.
Sales Agency, J. H. Weaver & Co., Philadelphia, Pa.

ROTHWELL COAL Co.
Dubree and Quarrier Mines; Drifts, Seam 44 in. thick.
PO—Dubree, W. Va.; SP—Rothwell; CTY —Fayette RR—C. & O. Keeanny's Creek Br.
PR—H. H. Rothwell.....Dubree, W.Va
GM—H. H. Rothwell, " "
PA—H. H. Rothwell, " "
GS—H. H. Rothwell, " "
MS—Chas. M. Higgins, " "
SM—Bert Hall, " "
TR—Harrison B. Smith, Charleston, W. Va.
S of H—1 Elec. loco. and mules track gauge 42 in.
S of M—2 Elec. mach. and hand.
PP—1 Atlas return tubular boiler, 150 H. P.; 1 gen. unit 250 volts D. C.; 1 pump.
EMP—85.
Sales Agency, New River Coal Co.
Note—Quarrier Mine will ship coal July 1st, 1915.

ROYAL COAL CO.
Royal Mine; Drift; Fire Creek Seam; 30 to 54 in. thick.
PO—Royal, W Va; SP—Same; CTY—Raleigh RR—C. & O., Piney Br.
PR—Wm. Prince.....Prince, W.Va.
TR—E. E. Huddleston.....Royal, W.Va.
GM—E. E. Huddleston, " "
PA—E. E. Huddleston, " "
MS—E. E. Huddleston, " "
EE—W. F. Perry, " "
EM—S. H. Bridge...Quinnimont, W.Va.
S of H—1 Elec. loco. and mules; track gauge 44 in.
S of M—Hand.
PP—2 Return Tubular boilers, totlal 275 H. P.; 1 gen. unit 250 volts D. C.
EMP—85. Last fiscal year output, 19,000 tons.
Sales Agency, C. & O. C. & C. Co., Sun, W. Va.

RUFFNER COAL CO.
Drift Mine; Eagle Seam, 66 to 72 in. thick.
PO—Accoville, W. Va.; SP—Logan, W. Va.; CTY—Logan; RR—C. & O., Buffalo Creek B.r
PR—Shirley Ruffner....Accoville, W.Va.
TR—C. L. Doneuant " "
S of H—1 Elec. loco.; track gauge 44 in.
S of M—1 Elec. mach.
Sales Agency, Eaton, Rhodes & Co., Cincinnati, O.
Note—New operation, now running 100 tons of coal per day.

SABINE SMOKELES SCOAL CO.
No. 3 Poca Mine; Drift, No. 3 Poca Seam; 48 in. thick.
PO—Otsego, W. Va.; SP—Same; CTY—Wyoming; RR—Virginian, Main Line.
PR—J. C. Sullivan.....Mullens, W.Va.
TR—C. H. Mead.....Otsego, W.Va.
GM—C. H. Mead, " "
PA—C. H. Mead, " "
MS—W. B. Parks, " "
SCO—Address the Company, " "
S of H—Elec. loco.; track gauge 44 in.
S of M—Hand.
PP—Power purchased.
Note—Not yet running coal, June 25, 1915.

ST. CLAIR COLLIERY CO.
St. Clair and Archer Mines; Seam, 54 to 78 in. thick.
PO—Eagle, W. Va.; SP—Same; CTY—Fayette; RR—C. & O.
PR—L.W. Artkinson, Washington, D.C.
TR—Wm. Burlington, ...Cincinnati, O.
GS—John Connell, ...Eagle, W.Va.
S of H—1 Elec. loco.
S of M—Elec. mach.
PP—Power purchased, 1 gen. unit 250 volts D.C.
EMP—150.
Sales Agency, Burlingham Coal Co., Cincinnati, O.

SANDRIDGE, LEE J., COAL CO.
Meriden Mines Nos. 1, 2, 3, 4 and 5, Drifts, Upper Freeport Seam, 6 ft. thick.
PO—Meriden, W. Va., SP—Same, CTY —Barbour. RR—B. & O., G. & B. Branch.
PR—Lee J. Sandridge..Meriden, W.Va.
TR—H. E. Thompson, " "
GM—Lee J. Sandridge, " "
GS—Lee J. Sandridge, " "
PA—Lee J. Sandridge, " "
CE—Thos. Dailey...Wilsonburg, W.Va.
MM—Luther Stemple..Meriden, W Va.
SCO—Meriden Merc. Co., Buyer, A. Miller, " "
S of H—Mules and 3 elec. loco., track gauge 3 ft.
S of M— 6 Elec. machines.
PP—4 Erie return tubular boilers, 2 gen. units 250 volts D. C., - pump.
EMP—60. 50 Bee Hive coke avons., Last fiscal year output, 50,800 tons.
Sales Agent, A. Thompson, 915 Betz Bldg., Philadelphia, Pa.

SAXMAN COAL & COKE CO.
General Office, 1414 Commonwealth Bldg., Philadelphia, Pa.
Saxman Nos. 1, 2 and 3, Slopes, Sewell Seam, 3½ to 5 ft. thick.
PO—Saxman, W. Va.; SP—Fenwick, W. Va., CTY—Nicholas. RR—B. & O., Saxman Branch.
PR—E. F. Saxman.....Phila., Pa.
TR—S. T. Gano.....Boston, Mass.
GM—C. R. Saxman..Saxman, W.Va.
PA—G. R. Saxman, " "
GS—P. M. Saxman, " "
EM—P. M. Saxman, " "
MM—F Mauer, " "
EE—C Kincaid, " "
SCO—Saxman Store Co. Buyer, I. R. Clark, " "
S of H—2 Elec. loco., track gauge 44 in.
S of M—3 Elec. mach. and hand.
PP—3 return tubular boilers, total 450 H. P., 2 gen. units, 1, 150 K. W. and 1, 100 K. W., 250 volts D. C.
EMP—150. 50 Bee Hive coke ovens. Last fiscal year output 85,000 tons.
Sales Agents, Philadelphia office.

SCOTIA COAL & COKE CO.
Rush Run, W. Va.
PR—G. H. Caperton, Charleston, W.Va.
TR—W. N. Jasper...Rush Run, WVa.
GM—G. H. Caperton, Jr., " "
GS—H. A. Mosely, .. Finlow, W. Va.
EM—O. Darwick.....Rush Run, W.Va.
MM—Henry Jackson..Rush Run, W.Va.
EE—Henry Jackson. " "
SCO—Scotia Coal & Coke Co. Buyer, W. N. Jasper, Rush Run "
Sales Agency, New River Coal Co., Charleston, W. Va.

Rush Run and Red Ash Mines, Drifts, Fire Creek Seam, 3 to 7 ft. thick.
PO—Rush Run, W. Va., SP—Same, CTY Fayette. RR—C. & O., South Side Branch.
MS—G. H. Caperton, Jr., Rush Run, W. Va.
S of H—Mules and 8 elec. loco. Track gauge 44 inches.
S of M—Hand.
PP—2 Water tube boilers, total 900 H. P., 2 gen. units 500 volts D. C., 9 pumps. 94 Bee Hive coke ovens. (not in use.)

Brookyn Mine, Drift, Sewell Seam, 4 ft. thick.
PO—Finlow, W. Va. SP—Brooklyn, W. Va., CTY—Yayette RR—C & O., South Side Branch.
MS—.H A. Mosely....Finlow, W.Va.
S of H—Mules and 6 elec. loco., track gauge 44 in.
S of M—Hand and 4 elec. mach.
PP—2 Return tubular boilers total 200 H. P., 1 gen. unit 500 volts D. C., 3 pumps 63 Coke ovens, Bee Hive type, (not in use).

SECONE COAL CO.
PR—A. J. King, ..Charleston, W.Va.
GM—A. J. King, " "
TR—C. M. Galway, " "
NOTE—Leased 1,290 acres on Main Island Creek. Will start to develop during the year.

SENG CREEK COAL CO.
Blue Star Mine, Drift, Coalburg Seam, 5½ ft. thick.
PO—Whitesville, W. Va. SP—Coal Valley, W. Va. CTY—Boone. RR —C. & O.
PR—T. E. B. Siler..Charleston, W.Va.
VP—Matthew Slush.....Detroit, Mich.
TR—H. M. Slush..Whitesville, W.Va.
PA—H. M. Slush, " "
MS—C. C. Lovett, " "
MF—G. W. Spradling, " "
EE—John Keffer. " "
S of H—4 Elec. loco.
S of M—3 elec. mach.
PP—2 boilers, total 250 H. P., 1 gen. unit, 250 volts D. C.
Sales Mgr. J. L. Siler, Charleston, W. Va.

SEWELL COLLIERY CO.
Sugar Camp Mine, Drift, Sewell Seam, 4 ft. thick.
PO—Caperton, W. Va., SP—Same, CTY —Fayette. RR—C. & O.
PR—D. W. Boone....Carpenter, W.Va.
TR—J. D. Boone, " "
GM—D W. Boone, " "
GS—D. W. Boone, " "
PA—D. W. Boone, " "
CE—Clark & Krebs, Charleston, W.Va.
EM—Clark & Krebs, " "
EE—Jim Johnson....Caperton, W.Va.
SM—W. R. Herndon, " "
S of H—Mules and 1 elec. loco.
S of M—Hand and 3 elec. machines.
PP—1 Return tubular 150 H. P., boiler, 500 volts D. C., 1 pump.
EMP—75. Last fiscal year output 29,380 tons.

SHAMROCK COAL CO.
Litz Mine, Drift No. 2 Gas Seam, 6 ft. 2 in thick.
PO—Logan, W. Va. SP—Shamrock, W. Va. CTY—Logan. RR—C. & O., Guyan Valley Branch.
PR—A. J. Litz.....Tazewell, Va.
GM—A. J. Litz, " "
TR—R. R. Smith....Huntington, W.Va.
PA—J. B. Agee, ... Logan, W. Va.
MS—J. B. Agee, " "
EM—Beddow, McCorkle & Wilson, Logan, W.Va.
SCO—Shamrock Store, Logan, W. Va; Buyer, J. G. McGuire, Logan, W. Va.
S of H—Mules and 1 Electric Locomotive. Track gauge 48 in.
S of M—3 Electric machines.
PP—500 volts D. C. purchase power.
EMP—75. Last fiscal year output 100,000 tons. Sales Agent, Litz-Smith Fuel Co., Huntington, W.Va.

SHANKLIN, JAS. R., COAL CO.
Now Naugatuck Coal Co.

SHAWNEE COAL & COKE CO.
Shawnee Mine, Drift, Poca No. 3 Seam.
PO—Eckman, W. Va. SP—Same. CTY —McDowell. RR—N. & W.
GM—Morris Watts.....Eckman, W.Va.
PA—Morris Watts, " "
SM—W. F. Rhudy, " "
S of H—Elec. and mules.
S of M—Hand.
PP—3 boilers, total 400 H.P.,250 volts D. C.
EMP—225. Coke ovens—188.

SHERMAN COAL CO.
Now Huddleston Coal Co.

SLAB FORK COAL COMPANY.
Slab Fork Mine, 5 openings, Drift, Beckley Seam, 3 ft. 8 in. to 6 ft. thick.
PO—Slab Fork, W. Va. SP—Same. CTY—Raleigh. RR—Virginia Ry.
PR—G. H. Caperton..Charleston, W.Va.
TR—W. G. Caperton, Slab Fork, W. Va.
GM—W. G. Caperton, " " " "
PA—W. G. Caperton, " " " "
GS—W. M. Warwick, " " " "
EM—Jas. Halstead, " " " "
EE—H. H. Mayse.
SM—J. H. Reid, " " " "
S of H—Mules, and 12 elec. loco. Track gauge 44 inches.
S of M—Pick and 9 elec. machines.
PP—Purchase power.
EMP—350. Last fiscal year output, 297,115 tons. Sales Agency, New River Coal Co., Charleston, W. Va.

SIGNAL KNOB COAL CO.
Signal Knob Mine; Drift; No. 2 Gas Seam, 60 in. thick.
PO—Ansted, W. Va; SP—Same; CTY—Fayette; RR—C. & O., Hawks Nest Br.
PR—W. H. Evans,.....Ansted, W.Va.
TR—W. H. Evans, " "
GM—W. H. Evans, " "
PA—W. H. Evans, " "
MS—R. H. Massey, " "
EM—R. H. Massey, " "
EE—R. H. Massey, " "
S of H—Mules.
S of M—Hand.
EMP—50. Last fiscal year output 25,000 tons.
Sales Agency, Eastern Coal & Export Corp., Richmond, Va.

SMOKELESS COAL & COKE CO.
Smokeless Mine, Drift, Pocahontas No. 3 Seam; 54 to 60 in. thick.
PO—Hiawatha, W. Va. SP—Smokeless, W. Va. CTY—Mercer. RR—N. & W., Widemouth Branch.
PR—D. H. Barger, Shawsville, Va.
TR—Geo. S. Strader, Bluefield, W. Va.
GM—D. H. Barger, Shawsville, Va.
GS—O. N. Moomaw, Elliston, W. Va.
PA—P. L. Vest.....Hiawatha, W.Va.
CE—Roy T. Wright, Matoaka, W. Va.
EM—Roy T. Wright, " " "
MS—P. L. Vest, Hiawatha, W. Va.
SM—J. H. Stanley. Hiawatha, W. Va.
S of H—1 Elec. loco. Track gauge 56 in.
S of M—3 Elec. mach.
PP—Purchase power.
EMP—100. Last fiscal year output, 45,634 tons.
Sales Agency, Bluefield Coal & Coke Co., Bluefield, W. Va.

SOLVAY COLLIERIES CO.
General Office, Syracuse, N.Y.
PR—F. R. Hazard, ..Syracuse, N.Y.
VP—W. L. Keen, " "
CE—W. L. Keen, " "
TR—L. O. Macdaniel, " "
PA—J. A. Whaling, " "
GM—A. B. Rawn, Kingston, W.Va.
Sales Agency, W. H. Ball, Syracuse, N.Y.

Marytown Mine; Drift; Sewell Seam, 43 in. thick.
PO—Marytown, W.Va.; SP—Same (Prepay); CTY—McDowell; RR—N. & W., Main Line.
MS—C. W. Connor, Marytown, W.Va.
SM—C. E. Loudermilk, " "
S of H—2 Elec. loco. and mules; track gauge 48 in.
S of M—Hand.
PP—3 Return tubular boilers, total 275 H.P., 2 gen. units 250 volts D.C.
EMP—180.

Big Sandy Mine; Drift; Sewell Seam, 45 in. thick.
PO—Big Sandy, W.Va.; SP—Same, (Prepay); CTY—McDowell; RR—N. & W., Main Line.
MS—C. W. Connor, Marytown, W.Va.
SM—C. E. Loudermilk, " "
S of H—2 Elec. loco.; track gauge 48 in.
S of M—5 Elec. mach. and hand.
PP—2 Return tubular boilers, total 250 H.P., 2 gen. units 250 volts D.C.
EMP—110.

Springton Mine; Drift; No. 3 Poca. Seam. 40 to 48 in. thick.
PO—Springton, W.Va.; SP—Same (Prepay); CTY—Mercer; RR—N. & W., Widemouth Branch
MS—D. C. Boag. ..Springton, W.Va.
SM—W. V. Tate. " "
S of H—1 Elec. loco. and mules; track gauge 56½ in.
S of M—3 Elec. mach. and hand.
PP—Power purchased.
EMP—110.

Continued on Next Page.

Kingston Mine; Drift; Powellton No. 2 Gas and Eagle Seam, 60 to 84 in. thick.
PO—Kingston, W.Va.; SP—Same, (Prepay); CTY—Fayette; RR—C. & O., Paint Creek Branch.
MS—H. S. McKallip, Kingston, W.Va.
SM—W. C. Petty, " "
S of H—9 Elec., 2 steam loco. and mules; track gauge 48 in.
S of M—14 Elec. mach. and hand.
PP—2 B. & W. water tube boilers, total 600 H.P., gen. units 440 volts A.C., 26 cycles, 250 volts D.C.
PP—Power supplied from Central plant.
EMP—310.

Westerly Mine; Drift; Powellton No. 2 Gas and Eagle Seams, 60 to 84 in. thick.
PO—Kingston, W.Va.; SP—Westerly W.Va., (Prepay); CTY—Fayette; RR—C. & O., Paint Creek Br.
MS—(Acting) H. S. McKallip, Kingston, W.Va.
SM—W. C. Petty, " "
S of H—3 Elec. loco. and mules; track gauge 44 in.
S of M—4 Elec. mach. and hand.
PP—2 Return tubular boilers, gen. unit 250 volts D.C.
EMP—125.

SOMERSET SMOKELESS COAL CO.
See Merchants Coal Co.

SOUTH SIDE CO.
South Caperton Mine; Drift; Sewell Seam; 48 to 52 in. thick.
PO—Caperton, W. Va.; SP—Same and S. Caperton, W. Va.; CTY—Fayette; RR—C. & O., South Side Br.
PR—G. H. Caperton, . . Charleston, W.Va.
TR—G. H. Caperton, " "
GM—G. H. Caperton, " "
PA—H. A. Mosely . . . . . Finlow, W.Va.
MS—H. A. Mosely, " "
CE—W. G. Caperton " "
EM—O. M. Amick, " "
MM—William Kennedy, " "
EE—William Kennedy, " "
S of H—Mules, gravity, 2 Elec. and 1 Steam loco. track guage 40 in.
S of M—3 Elec. mach. and hand.
PP—Erie Return Tubular Boilers, total 300 H. P., 1 gen. unit 250 volts D. C.; 2 pumps.
EMP—100. Last fiscal year output, 80,782.27 tons.
Sales Agency, New River Coal Co., Charleston, W. Va.

SOUTHERN CONNELLSVILLE COKE CO.
General Office, Uniontown, Pa. Two mines, one in Penna, and one in W. Va.
Marion Mine, Drift, Pittsburgh Seam, 6 to 7 ft. thick.
PO—Cheat Haven, Pa. SP—Same CTY—Fayette. RR—B. & O.
PR—F. E. Marbell, . . Uniontown, Pa.
TR—J. R. Davidson, " "
GM—S. A. Carson, " "
GS—S. A. Carson, " "
PA—S. A. Carson, " "
MS—A. Laing, Cheat Haven, "
SCO—Cheat Haven Supply Co., Buyer, T. M. Bawmor, Cheat Haven, Pa.
S of H—Mules. Track gauge 44 in.
S of M—Hand.
PP—2 boilers each 30 H. P.
EMP—94. Last fiscal year output, 75 000 tons. 64 Bee Hive coke ovens. Sales agent, S. A. Carson.

SOUTHWESTERN SPLINT FUEL CO.
General Office, Grafton, W. Va.
Black Cat Mine; Drift; Coalburg Seam; 54 to 60 in. thick.
PO—Crown Hill, W. Va.; SP—Same; CTY—Kanawha; RR—C. & O.
GM—John J. Hechmer. . . . Grafton, W.Va.
MS—S. B. Brydon. . . . Crown Hill, W.Va.
S of H—1 Elec. loco.; track gauge 40 in.
S of M—4 Elec. mach.
PP—Power purchased.
EMP—60. Last fiscal year ouput, 42,600 tons.

SPRING COAL MINING CO.
Sold to the Solvay Collieries Co.

SPRUCE BEND COAL CO.
Sharples No. 1 and 2, Drifts, No. 2 Gas or Winifrede Seam, 4½ to 5 ft. thick.
PO—Sharples, W. Va. SP—Same. CTY—Logan. RR—C. & O., Coal River Branch.
PR—P. M. Sharples, West Chester, Pa.
TR—Isabel Darlington, " "
GM—Samuel Butler, Sharples, W. Va.
GS—Samuel Butler, " "
PA—G. D. Dillon, " "
MS—John Spears, " "
CE—Philip Konrad, Kanawha Falls, W. Va.
EM—Philip Konrad, " "
MM—M. Selkirk, ... Sharples, W. Va.
EE—Samuel Butler, " "
SCO—Spruce Bend Coal Co. Buyer, G. D. Dillon, Sharples, W. Va.
S of H—Mules and 3 elec. loco. Track gauge 42 inches.
S of M—5 Elec. machines.
PP—Power purchased.
EMP—130. Last fiscal year output, 73,885 tons.

SPRUCE RIVER COAL CO., THE
General Office, Massillon, O.
Ramage Mine No. 2; Drift; Eagle Seam No. 1 Gas; 60 in. thick.
PO—Ramage, W. Va.; SP—Same; CTY—Boone; RR—C. & O., Coal River Div.
PR—I. M. Taggart . . . . . Massillon, O.
TR—F. F. Taggart, " "
GM—F. F. Taggart, " "
MS—J. B. Ramage . . . . . Ramage, W.Va.
PA—J. B. Ramage, " "
MM—W. D. Evans, " "
EE—W. D. Evans, " "
EM—S. E. Bradley . . . . . Madison, W.Va.
SCO—Spruce River Coal Co., Ramage, W.Va.
S of H—2 Elec. loco. and mules; track gauge 36 in.
S of M—6 Elec. mach.
PP—3 Water Tube Boilers; gen. unit 250 volts D. C.; 1 pump.
EMP—162. Last fiscal year output, 89,782 tons.
Sales Agent, F. F. Taggart, Massillon, O.

SPRUCE VALLEY COAL CO.
Spruce Valley Mine; Drift; Chilton Seam; 72 in. thick.
PO—Blair, W. Va.; SP—Same; CTY—Logan; RR—C. & O.
PR—A. C. Carr . . . . . Middlesboro, Ky.
TR—P. T. Colgan . . . . . Blair, W. Va.
GM—P. T. Colgan, " "
PA—P. T. Colgan, " "
MS—John Wills, " "
EM—Alfred Thomas, " "
SM—L. M. Patterson, " "
S of H—2 Elec. and 2 Storage Battery loco. Track gauge 44 in.
S of M—3 Elec. mach.
PP—Purchase power.
EMP—100. Last fiscal year output 90,180 tons.
Sales Agent, P. T. Colgan, Blair, W. Va.

SQUARE DEAL COAL CO.
Upland Bottom Siding Mine; Seam 36 in. thick.
PO—Lex, W.Va.; SP—Same; CTY—McDowell; RR—N. & W., Dry Fork Branch.
GM—H. W. Evans, ... Lex, W.Va.
GS—H. W. Evans, " "
MS—E. L. Dole, " "
SM—E. M. Evans, " "
EM—Vest & Cooper, ... Welch, W.Va.
S of H—Mules.
Sales Agent, E. M. Evans, Lex, W.Va

STANDARD KANAWHA COAL MINING CO.
General Office, 808 People's National Bank Bldg., Scranton, Pa.
PR—Ronald P. Gleason . . . . Scranton, Pa.
TR—Arthur A. Weinschenk, " "
GM—A. L. Black . . . . . Quick, W.Va.
GS—A. L. Black, " "
PA—A. W. Black, " "
MM—A. W. Black, " "
EE—A. W. Black, " "
CE—W. G. Critchton . . Charleston, W.Va.
EM—W. G. Critchton, " "
SM—D. W. Vineyard . . . . Quick, W. Va.
Sales Agency, Oakland Coal Co., Toledo.

Coalridge Mine; Drift; No. 5 Splint Seam 56 to 62 in. thick.
PO—Quick, W. Va.; SP—Coalridge, W. Va.; CTY—Kanawha; RR—K. & W. V.
MS—A. L. Black . . . . . Quick, W. Va.
S of H—2 Elec. loco. and mules. Track gauge 42 in.
S of M—9 Elec. mach.
PP—2 Erie Water Tube Boilers, total 250 H. P., gen. unit, 250 volts D. C.
EMP—175. Last fiscal year output 100,000 tons.

Acme No. 2, Drift, No. 5 Splint Seam, 6 ft. thick.
PO—Sanderson, W. Va. SP—Same. CTY—. . . . . RR—K. & W. Va.
SM—J. M. Haid, Sanderson, W. Va.
S of H—Mules and 1 elec. loco. Track gauge 42 inches.
S of M—3 Elec. machines.
PP—Power furnished from No. 1 Mine.
EMP—60. Last fiscal year output, 15,000 tons. Idle part of last year.

STANDARD POCAHONTAS COAL CO.
General Office, Cleveland, O.
Standard Mine; Shaft, Poca. No. 3 Seam.
PO—Capels, W. Va.; SP—Same; CTY—McDowell; RR—N. & W.
PR—E. C. Maurer . . . . . Cleveland, O.
TR—C. E. Sullivan, " "
GM—C. M. Gates . . . . . Welch, W.Va.
GS—John Gates . . . . . Capels, W.Va.
MS—John Gates, " "
SCO—Standard Supply Co., Buyer G. G. Douglas, Capels, W. Va.
S of H—Elec. loco.
S of M—Elec. mach.
PP—5 Boilers, toal 1,750 H. P.
EMP—200.
Sales Agency, Glen's Run Coal Co., Cleveland, O.

STANDARD SPLINT & GAS COAL CO.
Standard Mine, Drift; "Coalburg" Seam 60 to 108 in. thick.
PO—Standard, W. Va. SP—Same. CTY—Kanawha. RR—C. & O.
PR—J. R. Seal . . . . . Charleston, W.Va.
TR—W. S. Wood, " "
GM—W. S. Wood, " "
PA—G. G. Wood, Standard W. Va.
MS—G. G. Wood, " "
SM—E. C. Haynes, " "
EM—Morris Hansford . . . . Pratt, W.Va.
EE—S. M. Huddleston, Standard, " "
S of H—2 Elec. Loco. Track gauge 42 in.
S of M—5 Elec. Machines.
PP—2 Water Tube Boilers, 1 generating unit, 250 volts, D. C.
EMP—125. Last fiscal year output, 75,000 tons.

STAR COAL & COKE CO.
Star Mine, Drift, Sewell Seam, 4 to 6 ft. thick.
PO—Redstar, W. Va., SP—Same, CTY—Fayette. RR—C. & O., Loup Creek Branch.
PR—Geo. W. Jones . . . . Redstar, W.Va.
TR—Geo. W. Jones, " "
GM—Geo. W. Jones, " "
PA—Geo. W. Jones, " "
GS—Geo. W. Jones, " "
MS—D. Evendolle, " "
EM—Clark & Krebs, Charleston, W.Va.
MM—Geo. Thornton . . . . Red Star, W.Va.
SM—H. W. Wood . . . . . Redstar, W.Va.
S of H—Rope, mules and electric, track gauge 44 in.
S of M—3 Jeffrey machines.
PP—4 Houston, Stanwood & Gamble boilers, total 600 H. P. 2 gen. units 500 volts D. C., 1 pump.
EMP—152. Last fiscal year output, 145,853 tons.
Sales Agency, New River Coal Co., Charleston, W. Va.

STERNBERGER, E. L., COAL CO.
General Office, Cincinntai, Ohio.
Sterngerger Mine, Drift, Winifrede White Ash Block Seam, 5 to 7 ft. thick.
PO—Goodman, W. Va., SP—Goodman and Chatteroy, W. Va., CTY—Mingo. RR—Norfolk & Western.
PR—E. L. Sternberger . . . Cincinnati, O.
TR—Thos. McEvilley . . . . . Norwood, O.
GM—O. B. Gould . . . . Goodman, W.Va.
PA—O. B. Gould, " "
GS—Chas. May. " "
MM—Alfred Boggs, " "
SM—L. T. Long, " "
EM—D. M. Good . . . . Williamson, WVa.
CE—D. M Good, " "
S of H—Mules and 1 gasoline motor.
S of M—11 Compressed air mach.
PP—2 Water tube boilers, 2 Air comp. and 5 pumps.
EMP—85. Last fiscal year output 90,198 tons. Sales Agent, J. T. Herbert, Sec., Cincinnati, O.

STERLING COAL CO., LTD.
Two mines in Ohio and one in W. Va.
General Office, Cleveland, Ohio.
Cecil Mine, Drift, Freeport Seam.
PO—Cecil, W. Va. SP—Same. CTY—Taylor. PR—B. & O.
PR—Chas. B. McNaught, Toronto, Ont.
TR—H. G. Ratcliffe . . . . . Toronto, Ont.
GM—H. D. Hileman . . . . . Cleveland, O.
PA—F. M. Kirk. " "
EE—E. B. McNichols . . Salineville, O.
MS—M. P. Brady . . . . . Cecil, W.Va.
S of H—2 elec. loco. Track gauge 42 in.
S of M—2 elec. mach.
PP—1 water tube boiler, total 150 H. P., 1 gen. unit, 250 volts D.C.

STONE BRANCH COAL CO.
Stone Branch Mine; Drift; No. 2 Gas Seam 48 in. thick.
PO—Stone Branch; SP—Same; CTY—Logan RR—C. & O., Guyan Valley Br.
PR—G. M. Barger . . . . Bluefield, W.Va.
TR—J. P. Moorman . . . . Lynchburg, Va.
GM—C. W. Jones . . . . . Cora, W. Va.
PA—C. W. Jones. " "
EM—J. B. McCorkle . . . . Logan, W.Va
S of H—4 Elec. loco. Track gauge, 44 in.
S of M—7 Elec. mach.
PP—2 Return tubular boilers, 50 H. P., 2 gen. units, 250 volts D. C., 1 pump.
EMP—125. Last fiscal year output 77,542 tons.
Sales Agency, Producers Coal Co., Cincinnati, O.

STONE CLIFF COAL & COKE CO.
Stone Cliff Mine, Drift, Fire Creek Seam, 3 to 4 ft. thick.
PO—Stone Cliff, W. Va., SP—Same, CTY—Fayette. RR—C. & O.
PR—C. C. Lewis, Jr. . . Charleston, W.Va.
TR—C. A. Brockman . . Stone Cliff, W.Va.
GM—C. A. Brockman, " "
GS—C. A. Brockman, " "
PA—C. A. Brockman, " "
SM—H. E. Brockman, " "
EM—H. H. Bridge . Quinnimont, W.Va.
S of H—Mules and 3 elec. loco., track gauge 44 in.
S. of M—Hand.
PP—2 Water tube boilers, 1 gen. unit, 500 volts D. C.
EMP—60. 60 Bee Hive coke ovens. Last fiscal year output, 38,000 tons.
Sales Agency, West Virginia Coal Co., Richmond, Va.

STONE COAL LAND CO.
Drift Mine; Beckley and Pocahontas seam, 3 ft. 10 in. to 6 ft. thick.
PO—Winding Gulf, W. Va.; CTY—Raleigh; RR—C. & O.
PR—E. C. Minter, Winding Gulf, W.Va.
GM—E. C. Minter, " "
GS—E. C. Minter, " "
PA—E. C. Minter, " "
TR—J. E. Toliver, " "
EM—A. K. Minter, " "

STONE MOUNTAIN COAL CORP.
General Office, Roanoke, Va.
Marvin Mine; Drift, Alms-Thacker Seam, 36 to 42 in. thick.
PO—Matewan, W. Va.; SP—Same, CTY—Mingo; RR—N. & W.
PR—H. C. Elliott . . . . . Roanoke, W.Va.
TR—H. C. Elliott, " "
GM—H. C. Elliott, " "
GS—W. H. Adams . . . . Matewan, W.Va.
PA—D. M. Gann, " "
MM—Robert Stewart, " "
EE—Robert Stewart, " "
SCO—Stone Mountain Commissary, Matewan, W.Va.
CE—D. M. Good, Williamson, W. Va.
S of H—2 Elec. loco.
S of M—4 Elec. mach.
PP—Power purchased.
Sales Agency, Southern Sales Agency, Roanoke, Va.

STONEWALL COAL & COKE CO.
Terry and Stonewall Mines; Drifts, Red Ash Seam; 42 to 54 in. thick.
PO—Terry, W. Va.; SP—Terry Junction via Prince, W. Va.; CTY—Raleigh; RR—C. & O.
PR—W. S. Wood . . . . Charleston, W.Va.
TR—Frank Stevens . . . . . Lynchburg, Va.
GS—M. W. Murphy . . . . . Wright, W.Va.
MF—(T) Ed Littlejohn . . Terry, W. Va.
S of H—8 Elec. loco.
S of M—Hand.
PP—2 Waater tube boilers, total 500 H. P.

SUGAR CREEK COAL AND COKE CO.
Sugar Creek Nos. 1, 2 and 3 Mines, Drifts, Sewell Seam, 6 ft. thick.
PO—Mount Hope W. Va., SP—Macdonald, W. Va. on C. & O. Ry., Mt. Hope, W. Va. on Virginian Ry.
PR—Enoch Smith . . . . Charleston, W.Va.
TR—Enoch Smith, " "
GM—Enoch Smith, " "
GS—Enoch Smith, " "
PA—R. E. Bailey, " "
MS—Allen Hoffer, " "
MM—Guy Rodgers, " "
EE—Guy Rodgers, " "
SCO—Sugar Creek Store, Buyer, L. E. Fitzwater Mount Hope, W. Va.
S of H—Rope, track gauge 40 in.
S of M—Hand.
PP—3 Return tubular boilers, total 350 H. P., 2 gen. units 2200 volts A. C., 1 cycle 60 phases and 500 volts D. C.
EMP—135. Last fiscal year output 71,048 tons.
Sales Agency, The C. G. Blake Co., Cincinnati, O.

SULLIVAN COAL & COKE CO.
Sullivan Mine; Drift, Beckley Seam.
PO—Sullivan, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O.
GM—J. A. Wood . . . . . Sullivan, W.Va.
PA—J. A. Wood. " "
MS—Lawrence Willy. " "
S of H—Elec. loco.
S of M—Hand.
PP—3 Boilers, total 450 H. P., gen. units 250 volts D. C.
EMP—190.

SUMMERS, H. B., COAL CO.
Summers Mine.
PO—Accoville, W. Va.; CTY—Logan.
No report.

SUNBEAM COAL CO.
General Office, Logan, W. Va.
Sunbeam Mine, Drift, Winifrede Seam, 4½ to 5 ft. thick.
PO—Fort Branch, W. Va., SP—Same. CTY—Logan. RR—C. & O.
PR—A. J. King . . . . . Charleston, W.Va.
TR—C. M. Golway Pocahontas, W.Va.
PA—A. J. King . . . . Charleston, W.Va.
EM—A. J. King. " "

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SUNBEAM COAL CO.—Continued.
MS—F. E. King.....Logan, W.Va.
SM—J. B. Early, " "
S of H—2 Elec loco., track gauge 44 in.
S of M—2 Elec. machines.
PP—1 Return tubular 200 H. P. boiler, 1 gen. unit 250 volts D. C., 1 pump.
EMP—35. Last fiscal year output 40,000 tons.

SUNDAY CREEK CO.
General Office, Columbus, O.
Seven mines in West Virginia and 20 in Ohio.
PR—J. S. Jones.....Columbus, O.
TR—H. J. Reese, " "
GM John Winder, " "
PA—F. E. Falk, " "
EM—G. H. Dukes, " "
EE—O. S. Newton, " "
SM—G. E. Tetirick, " "
Sales Mgr., P. A. Coen, Columbus, O.

Nos. 111, 112 Mines, Drifts, No. 2 Gas Seam, 4½ to 5½ ft. thick.
PO—Carbondale, W. Va. SP—Same. CTY—Fayette. RR—K. & M.
MS—W. F. Mandt....Longacre, W.Va.
S of H—Elec. loco. and mules.
S of M—Elec.
PP—7 Boilers, total 900 H. P., gen. units, 250 volts D. C.
EMP—352. Coke Ovens, 302.

No. 114 Mine, Drift, No. 2 Seam, 5 ft. thick.
PO—Longacre, W. Va. SP—Same. CTY—Fayette. RR—K. & M.
MS—W. F. Mandt.
S of H—Elec. loco. and mules.
S of M—Elec.
PP—3 boilers, total 450 H. P., g.n. units, 250 vols D. C., 4 pumps.
EMP—256. Coke ovens, 115.

No. 101 Mine, Drift, No. 5 Seam, 5 ft. thick.
PO—Shrewsbury, W. Va. SP—Same. CTY—Kanawha. RR—K. & M.
MS—Carel Robinson, Cedar Grove, W.Va.
S of H—Elec. loco. and mules.
S of M—Elec.
PP—Boiler. 150 H. P., gen. units, 250 volts D. C., 2 pumps.
EMP—102.

No. 104 Mine, Drift, Coalburg Seam, 5 ft. thick.
PO—Cedar Grove, W. Va. SP—Same. CTY—Kanawha. RR — Kelley's Creek.
MS—Carel Robinson, Cedar Grove, W.Va.
S of H—Elec. loco. and mules.
S of M—Elec.
PP—Boilers, 150 H. P., gen. units, 250 volts D. C., 1 pump.
EMP—94.

Nos. 105 and 108 Mines; Drifts; Coalburg Seam; 60 to 72 in. thick.
PO—Mammoth, W. Va.; SP—Same; CTY—Kanawha; RR—Kelly's Creek.
MS—Carel Robinson, Cedar Grove, W.Va.
S of H—3 Elec. loco. and mules. Track gauge 42 in.
S of M—13 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 3 gen. units, 250 volts D. C.; 3 pumps.

No. 116 Mine; Drift; No. 1 Gas Seam, 72 in. thick.
PO—Harewood, W. Va.; SP—Same; CTY—Fayette; RR—K. & M.
MS—W. F. Mandt....Longacre, W. Va.
S of H—Mules and 1 Elec. loco. Track gauge 42 in.
S of M—3 Elec. mach.
PP—4 Return tubular boilers, total 600 H. P., 3 gen. units, 250 volts D. C.
Coke ovens, 166 Bee Hive.

SUNNYSIDE COAL CO
Now L. B. Brydon & Co.

SUPERIOR BLOCK COAL CO.
General Office, Beckley, W.Va.
Drift Mine; No. 5 Block Seam, 48 to 56 in. thick.
PO—Woodville, W.Va.; SP—Same; CTY—Lincoln; RR—C. & O., Coal River Div.
PR—G. C. Hedrick, Beckley, W.Va.
TR—B. J. Shumate, " "
Secy—John Morris, " "
GM John Anderson, " "
EM—John S. Cole, Charleston, W.Va.
S of H—Elec. motors.
S of M—1 Elec. mach.
Note—Developing.

SUPERIOR CONNELLSVILLE COKE CO.
General Office, Greensburg, Pa.
Opekiska Mine; Drift, Pgh. Seam, 84 to 120 in. thick.
PO—Opekiska, W. Va.; SP—Same; CTY—Monongalia; RR—B. & O.
PR—Morris L. Painter..Greensburg, Pa.
TR—H. S. Schribler, " "
GM—H. S. Schribler, " "
CE—C. H. Fogg, " "
MS—F. D. Woodward...Opekiska, W.Va.
SCO—Opekiska Supply Co., Opekiska, W. Va.
S of H—Mules.
S of M—Hand.
Formerly the Opekiska Mine of the Connellsville Coal & Coke Co.

SUPERIOR POCAHONTAS COAL CO.
Superior Nos. 1, 2, 3 and 4 Mines; Drift, Sewell Seam, 36 in. thick.
PO—Davy, W. Va.; SP—Same; CTY—McDowell; RR—N. & W.
PR—Justus Collins.....Cincinnati, O.
TR—George Wolfe.....Davy, W. Va.
GM George Wolfe, " "
GS—H. L. Hubbard, " "
MS—H. L. Hubbard, " "
SCO—Address the Company, " "
SM—C. L. Deeds, " "
S of H—6 Elec. loco.; mules; track gauge 48 in.
S of M—5 Elec. mach.
PP—3 Atlas and Phoenix return tubular boilers, total 450 H. P., 2 g.n. units 500 volts D. C.
EMP—400. Last fiscal year output 212,000 tons.
Sales Agents, Smokeless Fuel Co., Cincinnati, O.

SUPERIOR THACKER COAL & COKE CO.
Williamson No. 1 Mine, Drift, L. Thacker Seam.
PO—Williamson, W. Va. SP—Same. CTY—Mingo. RR—N. & W.
PR—H. H. Randolph..McComas, W.Va.
GM—H. H. Randolph, " "
TR—E. V. Randolph.Williamson, W.Va.
GS—M. O. Randolph, " "
CE—H. J. Brook.....Welch, W. Va.
MM—T. A. Mother..Williamson, W.Va.
S of H—1 elec. loco. and gravity.
S of M—1 elec. mach.
PP—Power purchased.
EMP—25. Last fiscal year output 20,000 tons.
Sales agency, Producers Coal Co., Cincinnati, O.

SYCAMORE COAL CO.
General Office, Vivian, W. Va.
Cinderella Mine, Drift, Winifrede Seam, 3½ to 6 ft. thick. Operate washery.
PO—Cinderella, W. Va., SP—Same, CTY—Mingo. RR—N. & W.
PR—S. W. Patterson....Vivian, W.Va.
TR—G. S. Patterson, " "
GM—G. S. Patterson, " "
PA—G. S. Patterson, " "
EM—J. F. Maurice, " "
EE—Ed. Brown, " "
MS—Evan Thomas, (outside) Cinderella, W.Va.
Robt. Erskine, (inside)" "
SM—M. H. Gilreath, " "
S of H—Mules and 4 elec. loco., track gauge 48 in.
S of M—7 Elec. machines.
PP—2 Houston, Stanwood & Gamble return tubular boilers, total 300 H. P., 2 gen. units 250 volts D. C., 1 pump. Last fiscal year output 146,460 tons.
Sales Agents, Castner, Curran & Bullitt, Phila, Pa.

TAYLOR COLLIERIES CO.
General Office, Second National Bank Bldg, Pittsburgh, Pa.
Taylor No. 1 Mine; Drift, Pgh. Seam, 96 to 120 in. thick.
PO—Clarksburg, W.Va.; SP—Same; CTY—Harrison; RR—B. & O., Short Line Div.
PR—S. A. Taylor.....Pittsburgh, Pa.
GM—S. A. Taylor, " "
CE—S. A. Taylor, " "
TR—J. M. Taylor, " "
PA J. M. Taylor, " "
EM—D. D. Britt.....Clarksburg, W.Va.
EE—Chas Wolfe. " "
MS—D. J. Campfield, " "
S of H—1 Elec. loco. and mules; track gauge 42 in.
S of M—5 Elec. mach. and hand.
PP—1 Rotary gen. set 200 K. W., gen. unit, 500 volts D. C., 1 pump; power purchased.
EMP—30. Output for one year 61,516 tons.
Sales Agency, Commonwealth Fuel Co., Pittsburgh, Pa.
Formerly the No. 2 Mine of the Corona Coal & Coke Co.

TEMPLETON COAL CO.
PR—W. W. Fowler.....Cincinnati, O.
GM—Geo. M. Fowler.....Dola, W. Va.
PA—Geo. M. Fowler, " "
GS—James Howe, " "
CE—Carl Hornor.....Clarksburg, W.Va.
Sales Agency, Matthew Addy & Co., Cincinnati, O.

Fowler No. 1 Mine, Drift; Pgh. No. 8 Seam, 8 ft. thick
PO—Mt. Clare, W. Va.; SP—Byron, W. Va.; CTY—Harrison. RR—B. & O., W. Va. and Pgh. Div.
MS—T. L. Price.....Mt. Clare, W.Va.
S of H—Mules and rope; gauge of track 36 in.
S of M—Hand.
EMP—30. Last fiscal year output 20,000 tons.
Fowler No. 2 Mine, Drift; Pgh. No. 8 Seam, 9 ft. thick.
PO—Dola, W. Va.; SP—Robey, W. Va.; CTY—Harrison. RR—B. & O. Short Line.
MS—Jas. Howe,.....Dola, W. Va.
S of H—Mules and rope; track gauge 42 in.
S of M—Hand.
EMP—90. Last fiscal year output 65000 tons.

THACKER COAL & COKE CO.
General Office 1532 Union Trust Bldg., Cincinnati, Ohio.
PR—J. Frank Black...Cincinnati, O.
VP—T. E. Houston, " "
TR—N. H. Franklin, " "
GM—T. E. Houston, " "
GS—Benjamin Lewis, Elkhorn, W.Va.
PA—John M. Lewis,Thacker Mines,W.Va.
MM—Lee Albert, " "
EM—A. F. Marshall, New Thacker,W.Va.
EE—Fred Boup, " "
SCO—Thacker Coal & Coke Co. Stores Buyers, J. W. Warden and P. P. Miller, Thacker Mines, W.Va.
Sales Agency, Houston Coal Co., Cincinnati, Ohio.
Thacker No. 2, Drift, Thacker Seam, 5 to 8 ft. thick.
PO—Thacker Mines, W. Va., SP—Colonel W. Va. CTY—Mingo. RR—N. & W., Thacker Branch.
MS—John M. Lewis,Thacker Mines,W.Va
S of H—Mules and 3 elec. loco., track gauge 44 in.
S of M—Pick mining, 1 comp. air mach. and 11 elec. machines.
PP—10 Erie and Penna. return tubular boilers, total 1300 H. P., 1 gen. unit 550 volts D. C., 1 air comp. and 1 pump
EMP—200. Last fiscal year output 300,000 tons.
Thacker No. 11, Drift, Thacker Seam, 4 to 5½ ft. thick.
PO—New Thacker, W. Va., SP—Mayo, W. Va., CTY—Mingo. RR—N. & W., Lick Fork Branch
MS—John M.Lewis, Thacker Mines,W.Va.
S of H—Mules and 6 elec. loco. Track gauge 44 in.
S of M—8 Elec. machines.
PP—4 Return tubular boilers, total 600 H. P., 1 gen. unit 550 volts D. C., 1 pump.
EMP—200. Last fiscal year output 150,000 tons.

THOMAS, D. C., COAL CO.
General Office, Columbus, O.
Grace Mine; Drift; Chilton Seam; 72 to 90 in. thick.
PO—Blair, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Coal River Div.
PR—D. C. Thomas.....Blair, W.Va.
GM—D. C. Thomas, " "
PA—J. O. Trumbo, " "
MS—A. R. Thomas, " "
EM—A. R. Thomas, " "
EE—J. Arbaugh, " "
TR—J. W. Blower.....Columbus, O.
S of H—Mules and 1 Elec. loco.; track gauge, 44 in.
S of M—2 Arc Wall Machines.
PP—Gen. Unit, 500 volts D. C., and 2 pumps. Purchase power.
EMP—75.
Sales Agency, Hisylvania Coal Co., Columbus, O.

THOMAS COAL CO.
General Office, Bramwell, W. Va.
Thomas Mine; Drift; Pocahontas No. 3 Seam 4½ ft. thick; washery.
PO—McComas, W. Va.; SP—Mora, W. Va.; CTY—Mercer; RR—N. & W. Crane Creek Branch.
PR—L. C. Hausberoughs...Salem, Va.
TR—W. H. Thomas, Bramwell, W.Va.
GM—W. H. Thomas, " "
GS—W. J. Pritchard....McComas, W.Va.
PA—W. J. Pritchard, " "
SM—N. J. Roberts.....Crystal, W.Va.
EM—Eugene Powell, " "
MM—Owen Sizemore, " "
S of H—4 elec. loco. and mules. Track gauge 48 in.
S of M—Elec.
PP—2 Water tube, 2 Return tubular boilers total 300 H. P., 3 gen. units, 220 A. C., 60 cycles; 2 pumps delivering water to surface and power purchased
EMP—300. Coke ovens 146 Bee Hive. Last fiscal year output 200,000 tons.
Sales Agency, Flat Top Fuel Co., Bluefield, W. Va.

THURMOND COAL CO.
See Rock Lick Coal Co.

TIDEWATER COAL & COKE CO.
Tidewater Mine, Drift, Pocahontas No. 3 Seam, 5 to 6½ ft. thick.
PO—Vivian, W. Va., SP—East Vivian, W. Va., CTY—McDowell RR—Norfolk & Western
PR—T. King.....Boston, Mass.
TR—C. H. Boardman...Vivian, W.Va.
GM—C. H. Boardman, " "
GS—Bert C. Hylton, " "
PA—Bert C. Hylton, " "
EM—Bert C. Hylton, " "
MS—S. B. Campbell, " "
MM—W. F. Harris....Kimball, W.Va.
SCO—Tidewataer Coal & Coke Co., Buyer, W. E, Sult, Vivian, W.Va.
S of H—Mules and 4 Elec. loco.; track gauge 44 in.
S of M—Hand.
PP—6 Return tubular boilers, total 710 H. P., 3 gen. units 250 volts D. C. 3 pumps.
EMP—275. Coke ovens, 300. (not being 175,488 tons.

TRACE FORK COAL CO.
Trace Fork No. 7 Mine; Drift, Poca. No. 3 Seam, 48 to 56 in. thick.
PO—Mullens, W. Va.; SP—Same; CTY—Wyoming; RR—Virginia.
PR—Hon. Edw. Cooper..Bramwell, W.Va.
TR—J. G. Thomas.....Mullens, W.Va.
GM—J. G. Thomas, " "
MS—J. G. Thomas, " "
PA—N. A. Williams, " "
EM—A. B. Johnson, " "
S of H—1 Elec. loco.; track gauge 44 in.
S of M—1 Elec. mach.
PP—Power purchased.
Last fiscal year output 22,175 tons.

TURKEY GAP COAL & COKE CO.
General Office, Dott, W. Va.
Turkey Gap and Wenonah Colliery, Drifts, Pocahontas No. 3 Seam, 48 to 54 in. thick.
PO—Dott, W. Va., SP—Wenonah, W. Va., CTY—Mercer. RR—N. & W., Widemouth, Branch.
PR—Frank P. Harmon..Lynchburg, Va.
TR—Jas. A. McQuail....Ennis, W.Va.
GM—Edw. J. McQuail, " "
PA—W. Henry Johnson....Dott, W.Va.
EM—Roy T. Wright....Matoaka, W.Va.
SCO—Turkey Gap Coal & Coke Co., Buyer, W. Henry Johnson. Dott,W.Va.
S of H—Mules, 4 elec. and 1 steam loco.
S of M—6 Elec. machines.
PP—Boiler 250 H.P., 2 gen. units 250 volts D.C.
EMP—275. Sales agents, Castner, Curran & Bullitt, Phila., Pa.

TURKEY KNOB COAL CO.
Turkey Knob Mine, Drift.
PO—MacDonald, W. Va. SP—Turkey Knob, W. Va. CTY—Fayette. RR—C. & O.
GM—J. E. Beury..Macdonald, W. Va.
PA—J. E. Beury, " "
EM—S. H. Bridge.Quinnimont, W.Va.
MS—J. G. Thayer..Macdonald, W.Va.
SM—T. J. Dent, " "
S of H—Rope and elec. loco.
S of M—Hand and elec. mach.
PP—4 boilers, 500 H. P., gen. units, 500 volts D. C.
EMP—200.
Coke ovens—100.

TYGARTS RIVER COAL CO.
Now Boat Run Coal Co.

UNITED STATES COAL & COKE CO.
General Office, Carnegie Building, Pittsburgh, Pa.
PR—W. H. Clingerman..Pittsburgh, Pa.
TR—J. D. McCreery, " "
PA—T. S. Duncan, " "
GS—Edward O'Toole.....Gary, W.Va.
Chief EM—H. N. Eavenson, " "
SCO—United Supply Co. Buyer, C. Boughner, " "

No. 1 Mine, Shaft, Pocahontas No. 3 and No. 4 Seams. No. 3, 5 ft. 8 in. and No. 4, 5 ft. 6 in. thick.
PO—Wilcoe, W. Va., SP—Same, CTY—McDowell RR—N. & W., Tug Fork
MS—John M. Tulley.....Gary, W.Va.
S of H—Elec., track gauge 48 in.
S of M—Mine shut down.
PP—3 B. & W. Cahall water tube boilers, total 684 H. P., 3 pumps. Electricity furnished from Mine No. 3. 360 Bee Hive coke ovens.

No. 2 Mine, Slope, pocahontas No. 4 Seam, 6 ft. thick.
PO—Gary, W. Va., SP—Kennon, W. Va. CTY—McDowell. RR—N. & W Tug Fork Branch.
MS—John M. Tulley.....Gary, W.Va.
S of H—Mules and 3 elec loco., track gauge 48 in.
S of M—8 Elec. machines.
PP—1 Air comp. and 3 pumps. Power furnished from Mine No. 3. 350 Bee Hive coke ovens.

No. 3 Mine, Drift, Pocahontas No. 4 Seam, 4 ft. 8 in. thick.
PO—Gary, W Va., SP—Same, CTY—McDowell RR—N. & W., Tug Fork Branch.
MS—H. T. Graham.....Gary, W.Va.
S of H—2 Elec. loco. and mules., track gauge 48 in.
Continued on Next Page.

S of M—8 Elec. machines.
PP—9 B. & W. type Cahall water tube boilers, total 3800 H. P., 6 gen. units 6600 volts A. C., 3-phase 25 cycle, 1 air comp. and 2 pumps. 300 Bee Hive coke ovens.

Nos. 4 and 5 Mines, Drifts, Pocahontas No. 3 Seam, 6 ft. 3 in. to 7 ft. thick.
PO—Thorpe, W. Va., SP—Same, CTY—McDowell RR—N. & W., Tug Fork Branch.
MS—A. N. Harris.....Thorpe, W.Va.
S of H—Mules and 3 elec. loco., track gauge 48 in.
S of M—12 Elec. machines.
PP—Power furnished from No. 3 Mine 1 air comp. and 3 pumps. 311 Bee Hive coke ovens.

No. 6 Mine, Drift, Pocahontas No. 4 Seam, 6 ft. thick.
PO—Gary, W. Va., SP—Ream, W Va., CTY—McDowell. RR—N. & W. Tug Fork Branch.
MS—Neil Friel,.....Gary, W.Va.
S of H—Mules and 3 elec. loco., track gauge 48 in.
S of M—8 Elec. machines.
PP—Power furnished from Mine No. 3, 1 air comp. and 2 pumps. 308 Bee Hive coke ovens.

Nos. 7 and 8 Mines, Drifts, Pocohontas No. 4 Seam, 6 ft. thick.
PO—Eibert, W. Va. SP—Same. CTY—McDowell RR—N. & W., Tug Fork Branch.
MS—W.W. Harding,.. Elbert, W. Va
S of H—Mules and 13 elec. and 1 storage battery loco., track gauge 48 in
S of M—13 Elec. machines.
PP—1 Air comp. and 2 pumps. Power furnished from Mine No. 3.

No. 10 Mine, Drift, Pocahontas No. 3 and 4, No. 3, 5 ft. 8 in. thick and No. 4, 4 ft. 8 in. thick
PO—Gary, W Va., SP—Venus, W. Va., CTY—McDowell. RR—N. & W., Tug Fork Branch.
MS—H. T. Graham.....Gary, W.Va.
S of H—Mules and 3 elec. loco., track gauge 48 in.
S of M—10 elec. machines.
PP—1 Air comp. and 2 pumps. Power furnished from Mine No. 3.

No. 11 Mine, Drift, Pocahontas Nos. 3 and 4 Seams, No. 3, 5 ft. 6 in. thick, and No. 4, 5 ft. thick.
PO—Thorpe, W. Va. SP—Same. CTY—McDowell. RR—N. & W., Tug Fork Branch.
MS—I H. Dunn.....Thorpe, W. Va.
S of H—Mules and 2 elec. loco., track gauge 48 in.
S of M—12 Elec. machines.
PP—1 Air comp. and 2 pumps. Power furnished from Mine No. 3.

No. 12 Mine, Drift, Pocahontas No. 3 Seam, 8 ft. thick.
PO—Anawalt, W. Va., SP—Same, CTY—McDowell. RR— N. & W., Tug Fork Branch.
MS—H. T. Graham,....Anawalt, W.Va.
S of H—Mules and 2 elec. loco., track gauge 48 in.
S of M—5 Elec. machines
PP—1 Air comp. and 2 pumps. Power furnished from Mine No. 3.

UNITED STATES COAL & OIL CO.
General Office, Holden, W. Va.
PR—T B. Davis, 1 Broadway, New York.
TR—F. W. Batchelder, Boston, Mass.
GS—A. R. Beisel, Holden, W. Va.
Supt—W. O. Percival....Holden, W.Va.
PA—W. T. Smythe, Huntington, W. Va.
CE—Paul Hardy, " " "
EM—J. E. Rowland....Holden, W.Va.
Eng Const—C. W. Snyder, " "
MM—Robert Dice, " " "
EE—Jas. Mainland, " " "
SCO—Island Creek Stores Co. Buyer, W. J. Crutcher, " " "
Sales agent, R. S. McVeigh, Union Central Bldg., Cincinnati Ohio, and L. A. Hickey Land Title Bldg., Philadelphia, Pa.

Nos. 1 and 2 Mines, Drifts, Island Creek Coal Seam, 6 to 7½ ft. thick.
PO—Holden, W. Va. SP—Same. CTY—Logan. RR—C. & O.
MS—J. W. Snyder, Holden, W. Va.
S of H—18 elec. loco. Track gauge 44½ in.
S of M—19 elec. machines.
PP—10 Water tube and 8 return tubular boilers, total 2,000 H. P. 4 Gen. units, 550 volts. D. C. 6 pumps.
EMP—593. Last fiscal year output, 771,793 tons

Nos. 3 and 4 Mines, Drifts, Island Creek Coal Seam, 6 to 7½ ft thick
PO—Whitman, W. Va.; SP—Holden, W. Va.; CTY—Logan, RR—C. & O.
MS—Major Curry.....Holden, W.Va.
S of H—12 elec. loco. Track gauge 44½ in.
S of M—12 elec. machines.
PP—550 volts D. C. 2 pumps. Central station.
EMP—398. Last fiscal year output, 469,910 tons.

Nos. 5 and 6 Mines, Drift, Island Creek Coal Seam, 6 to 7½ ft. thick.
PO—Holden, W. Va. SP—Same. CTY—Logan. RR—C. & O.
MF—H. T. Woods, Holden, W. Va.
S of H—5 elec. loco. Track gauge 44½ in.
S of M—5 elec. machines.
PP—550 volts D. C. Central station. 1 pump.
EMP—141. Last fiscal year output, 227,534 tons.

Nos. 7 and 8 Mines, Slope, Island Creek Coal Seam, 6 to 7½ ft. thick.
PO—Holden, W. Va. SP—Same. CTY—Logan. RR—C. & O.
MS—W. S. Parsons, Holden, W. Va.
S of H—12 elec. loco. Track gauge 44½ in.
S of M—10 elec machines.
PP—4 pumps. Central Station.
EMP—445. Last fiscal year output. 589,679 tons.

Nos. 9 and 10 Mines, Drifts, Island Creek Coal Seam, 6 to 7½ ft. thick.
PO—Holden, W. Va. SP—Same. CTY—Logan. RR—C. & O.
MF—Geo. Thompson, Holden, W. Va.
S of H—4 elec. loco. Track gauge, 44½ in.
S of M—3 elec. machines.
PP—1 pump. Central Station.
EMP—93. Last fiscal year output, 148,529 tons.

Mines Nos. 11 and 12; Slope; Island Creek Coal Seam; 72 to 90 in. thick.
PO—Mallory, W. Va.; SP—Monaville, W. Va. CTY—Logan; RR—C. & O.
MS—W. P. Ferguson....Mallory, W.Va.
S of H—Mules. Track gauge 44½ in. thick.
S of M—1 Elec. mach.
PP—Purchase power.
EMP—128.

UNITED POCAHONTAS COAL CO.
Drift Mine, No. 3 Poca. Seam, 54 to 60 in. thick. Operate washery.
PO—Crumpler, W. Va.; SP—Same; CTY—McDowell; RR—N. & W., North Fork Br.
PR—A. D. Rice.....Crumpler, W.Va.
GM—A. D. Rice, " "
PA A. D. Rice, " "
MS—H. H. Honaker, " "
EM—E. L. Bailey, " "
FE—W. O. Lambert, " "
TR—Paul W. Kilpatrick..Worth, W.Va.
S of H—Elec. loco.
S of M—Elec. mach.
Sales Agency, Castner, Curran & Bullitt, Philadelphia, Pa.
New operation.

UPLAND COAL & COKE CO.
General Office, Elkhorn, W. Va.
Upland No. 1 Mine, Drift Mine, Pocahontas No. 3 Seam from 7 to 9 ft. thick.
PO—Elkhorn, W. Va. SP—Same. CTY—McDowell. RR—N. & W.
PR—Louis R. Page, Philadelphia, Pa.
TR—Louis R. Page, " "
GM—John J. Lincoln, Elkhorn, W. Va.
GS—John J. Lincoln, " " "
PA—Thomas Miller, " " "
CE—Crozer Land Ass'n, " " "
MM—Allen Raup, " " "
EE—Allen Raup, " " "
SR—Thomas Miller, " " "
MS—Jos. McCrickard, " "
S of H—2 Elec. loco, Track gauge, 44 in.
S of M—Hand.
PP—4 Return tubular boilers, total 550 H. P. 1 gen. unit, 500 volts D. C.
EMP—370. Annual output 359,758
Sales Agents, Crozer-Pocahontas Co., Bluefield, W. Va. 216 Bee Hive coke ovens.

VAUGHAN CONSTRUCTION CO. Inc.
Vaughan Mine; Drift, Seam 44 to 48 in. thick.
PO—Roderfield, W. Va.; SP—Same; CTY McDowell; RR—N. & W., Main Line.
PR—L. H. Vaughan.....Roanoke, Va.
TR—S. C. Snedd.....Shawville, Va.
GS—A. M. Marve....Roderfield, W.Va.
PA—J. E. Proctor. " "
S of H—2 Elec. loco.; track gauge 48 in.
S of M—Hand.
PP—Power purchased.
Leased the mines of the Vaughan Coal & Coke Co.

VILLA COAL MINING CO.
See Mill Creek Cannel Mining Co.

VINCENT COAL CO.
Gressli, Drift; Pgh. Seam, 84 to 96 in. thick.
PO—Clarksburg, W. Va. SP —Same. CTY—Harrison. RR—B. & O.
PR—Wm. Atkins, ..Philadelphia, Pa.
TR—Wm. Atkins, " "
GM—V. E. Gocke, Clarksburg, W. Va.
GS—V. E. Gocke, " " "
PA—V. E. Gocke, " " "
EM—D. D. Britt, " "
S of H—Mules.
S of M—Hand.
EMP—125. Last fiscal year output, 72,000 ons.

VIRGINIA-BUFFALO COAL CO.
General Office, Huntington, W. Va.
PR—Geo. M. Jones, " " " "
TR—E. J. Payne. " " " "
GM—J.N.Schweitzer, Amherstdale, W.Va.
GS—J. N. Schweitzer, " " "
PA—J. N. Schweitzer, " " "
SM—C. A. Breneman, " " "
EM—W. G. Wilkins Co., Pgh. "
MM—I. L. Ward....Amherstdale, W.Va.
EE—I. L. Ward, " "
Sales Agents, John T. Hesser Coal Co., Cincinnati, O.

Amherst Mine, Drift, Thacker No. 2 Gas, or Island Creek Seam, 4½ to 9 ft. thick
PO—Robinette, W. Va. SP—Amherstdale, W. Va. CTY—Logan. RR—C. & O., Guyan Valley Branch, Buffalo Extension.
S of H—Mules and 1 elec. loco. Track gauge 44 inches.
S of M—2 Electric machines.
PP—2 Erie City Iron Works return tubular boilers, total 300 H. P. 1 Gen. unit 250 volts D. C.
EMP—75. Last fiscal year output, 50,000 tons.

Virginia-Buffalo Mine. Drift, Eagle Sam; 56 to 96 in. thick.
PO—Amherstdale, W. Va.; SP—Same; CTY—Logan; RR—C. & O., Guyan Valley Br., Buffalo Extension.
SM—J. N. Schweitzer, Robinette, W. Va.
S of H—Mules. Track gauge 36 in.
S of M—2 Elec. machines.
PP—1 Nagal 80 H. P. boiler. 1 Gen. unit 250 volts D. C.
EMP—50. Last fiscal year output, 40,353 tons.

VIRGINIA & PITTSBURGH COAL & COKE CO. (THE)
General Office, Fairmont, W. Va.
Kingmont and Morgan Mines; Drift; Pgh. Seam, 96 to 108 in. thick.
PO Kingmont, W.Va.; SP Same; CTY—Marion; RR—B. & O.
PR—R. M. Hite, ...Fairmont, W.Va.
GM—R. M. Hite, " "
PA—R. M. Hite, " "
GS—R. M. Hite, " "
CE—R. M. Hite, " "
TR—Joseph R. Tindall, Stephen Girard Bldg., Philadelphia, Pa.
S of H—3 Elec., 1 gasoline loco., mules and rope; track gauge 42 in.
S of M—Hand.
PP—1 Gen. unit 250 volts D.C., 3 pumps.
Coke ovens 50 Bee Hive.
Sales Agency—Hite & Rafetto, 727 Stephen Girard Bldg., Philadelphia, Pa.

VIRGINIA COAL COMPANY.
Virginia No. 1, Slope; Split Kanawha Gas Seam, 4 ft. thick.
PO—Coal Fork, W. Va. SP—Dana, W. va. CTY—Kanawha. RR—K. M., Campbell's Creek Branch.
PR—Jas. Kay, ...Charleston, W. Va.
GM—Jas. Kay, " " "
TR—W. R. McConihay, Coal Fork, W. Va.
PA—W. D. Lewis, " "
SM—W. R. McConihay, " " " "
S of H—Mules and 3 Electric Locomotives. Track gauge 44 in.
S of M—Hand and 3 Electric Machines.
PP—2 Water Tube Boilers, 1 generating unit 250 volts, D.C. 3 pumps.
EMP—60. Last fiscal year output, 34,357 ons.

VIRGINIA FUEL CO.
See Kimball Pocnhontas Coal Co.

VIRGINIA-MARYLAND COAL CORP.
General Office, Adamston, W. Va.
PR—Lilburn T. Myers, Richmond, Va.
TR—A. P. Adams, ...Baltimore, Md
Anditor, R. T. Naylor, " "
GM—Irving Adams. " "
GS—A. L. White, Adamston, W. Va.
PA—A. L. White, " " "
CE—Horner Bros., Clarksburg, W. Va.
SM—T. N. Mason, Shinnston, W. Va. Sales agency, S.M. Hamilton Coal Co., Baltimore, Md.
Willard Nos. 1, 2 and 3, Drift, Pgh Seam, 7½ ft. thick.
PO—Adamston, W. Va. SP—Shinnston, W. Va. CTY—Harrison. RR—B. & O.
MM—Amos Reese, Shinnston, W. Va.
S of H—Gasoline loco and mules. Track gauge 42 in.
S of M—16 comp. air mach.
PP—3 Return tubular, Atlas and Erie boilers, total 450 H. P. 2 compressors and 6 pumps.
EMP—200 Last fiscal year output 225,000 tons.

Scotch Hill Mine, Shaft, Kittanning Seam, 4½ ft. thick.
PO—Adamston, W. Va. SP Newburg, W. Va. CTY—Harrison. RR—B. & O.
MM—Tom Turnley, ..Newburg, W. Va.
MS—L. C. Stevenson, " " "
S of H—1 Gasoline loco and mules. Track gauge 42 in.
S of M—6 Comp. air mach.
PP—3 Erie Return tubular boilers, total 450 H. P. 1 compressor and 2 pumps.
EMP—100. Last fiscal year output, 50,000 tons.

VIRGINIA-POCAHONTAS COAL CO.
Thelma, Caretta, Nora, Coalwood Nos. 1, 2 and 3 Mines, succeeded by the Carter Coal Co.

VIRGINIA SMOKELESS FUEL CO.
PO—Mullens, W. Va.
PR—W. E. Dugans....Mt. Hope, W. Va.
TR—L. N. Frantz.....Mullens, W.Va.
Starting developments.

VULCAN COAL CO.
Vulcan Mine, Drift, Seam 4 to 7½ ft. thick.
PO—Vulcan, W. Va. SP—Delorme, W. Va. CTY—Mingo. RR—Norfolk & Western, Main line.
PR—W. C. Stephenson, Roancke, W. Va.
TR—W. C. Stephenson, " " "
GM—Roger Martin, .. Vulcan, W. Va.
GS—Roger Martin, " " "
PA—F. C. Thornton, " " "
MM—Walter Wroten, " " "
EE—G. C. Miller, " " "
CE—R. F. Haskins, Bluefield, " "
EM—R. F. Haskins, " " "
SM—F. C. Thornton, " " "
MS—George Foster, " " "
S of H—Mules and 1 gasoline motor. Track gauge 56½ inches.
S of M—Pick.
PP—2 Return tubular boilers, total 250 H. P. 1 Gen. unit 100 volts D. C.
EMP—127. Last fiscal year output 81,760 tons.

WAKE FOREST MINING CO.
Wake Forest Mine; Drift; No. 2 Kanawha, Gas Seam; 54 to 78 in. thick.
PO—Wake Forest, W. Va. SP—Same. CTY—Kanawha. RR—C. & O.
PR—J. C. Grymes, Wake Forest, W. Va.
TR—J. C. Grymes, " " " "
GM—J. C. Grymes, " " " "
PA—J. C. Grymes, " " " "
MS—J. W. Gay, " " " "
EE—M. A. Leach, " " " "
SM—M. A. Cramer, " " " "
S of H—Mules and 2 Elec. loco.; track gauge 42 in.
S of M—5 Elec. machines.
PP—2 Return tubular boilers, total 300 H. P. 1 Gen. unit, 500 volts D. C., 1 pump.
EMP—110. Last fiscal year output, 104,000 tons. Sales Agency, Carbon Fuel Co., Cincinnati, Ohio.

WAR EAGLE COAL CO.
War Eagle, Starr, Pappoose and Mephisto Mines, Drifts, War Eagle Seams, No. 1 and 2, 57 to 66 in. thick.
PO—War Eagle, W. Va. SP—Same CTY—Mingo. RR—N. & W.
PR—A. H. Moore, War Eagle, W. Va.
TR—N. V. James, " " " "
GM—A. H. Moore, " " " "
PA—A. H. Moore, " " " "
GS—G. W. Coffey. " " " "
CE—D. M. Good, Williamson, " "
MM—T. Cole, War Eagle, " "
SCO—War Eagle Supply Co., Buyer S. K. Varney, War Eagle, W. Va.
S of H—4 Steam loco. Track gauge 44 in.
S of M—24 Compressed air machines.
PP—7 Erie water tube boilers, total 1,050 H. P., 2 compressors
EMP—500 Last fiscal year output, 250,000 tons.

WARRIOR COAL CO.
Warrior Mine; Drift; War Creek Seam; 5 to 6 ft. thick
PO—War W Va.; SP Warrior Siding, W. Va.; CTY—McDowell; RR N & W., War Creek Br.
PR—H. E. Harman Tazewell Va.

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WARRIOO COAL CO.—Continued.
TR—W. Henry Johnson....War, W.Va.
PA—W. Henry Johnson, " "
EM—G. D. Davidson, " "
MS—D. Davidson, " "
GM—W. T. Williams..Bluefield, W.Va.
GS—W. T. Williams, " "
CE—W. T. Williams, " "
SCO—Warrior Coal Co. Store, Buyer, W. Henry Johnson, War, W. Va.
S of H—Elec. loco.
S of M—Elec. mach.
PP—Purchase power.
EMP—75.
Sales Agency, Norfolk & Chespeake Coal Co.

WEBB COAL MINING CO.
General Office, Cincinnati, O ... ..
Webb Mine; Drift; Coalburg Seam, 80 to 98 in. thick.
PO—Garrison, W.Va.; SP—Ferndall, W.Va.; CTY—Boone; RR—C. & O., Cabin Creek Br.
PR—L. M. Webb, ...Cincinnati, O.
TR—L. M. Webb, " "
GM—John Holmes, ...Garrison, W.Va.
S of H—3 Elec. loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—2 Houston-Stanwood & Gamble, return tubular boilers, total 300 H.P., 2 pumps.
EMP—125. Last fiscal year output 88,000 tons.
Sales Agency, The Webb Fuel Co., Cincinnati, O.

WELCH COAL & COKE CO.
See Welch Coal Co.

WELCH COAL CO.
General Office, Cincinnati, O.
Welch and Hemphill Mines; Drifts; Welch Pocahontas Seam; 46 to 75 in. thick.
PO—Welch, W. Va.; SP—Same; CTY—McDowell RR—N. & W.
PR—E. J. Howe.....Cincinnati, O.
TR—S. A. Toy.....Freeman, W.Va.
GM—F. J. Baxter.....Welch, W.Va.
MS—F. J. Baxter, " "
PA—L. J. Brindley, " "
EM—H. J. Brook, " "
SCO—Welch Coal Co., Buyer, L. J. Brindley, Welch, W. Va.
S of H—1 Elec. and 1 storage battery loco. Track gauge 48 in.
S of M—Hand and 8 comp. air mach.
PP—2 Return tubular boilers, total 180, H. P.; 1 air comp.; 6 pumps.
EMP—225. Last fiscal year output 100,000 tons.
Sales Agency, Castner, Curran & Bullitt.

WEST VIRGINIA COAL MINING CO., THE
General Office, Richmond, Va.
Wesvaco Mine; Drift; Sewell Seam; 40 to 48 in thick.
PO—Skelton, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O. and Virginian, P. C. & P.
PR—E. S. Simpson.....Richmond, Va.
TR—M. L. Norvell, " "
GM—T. R. Ragland....Skelton, W.Va.
GS—T. R. Ragland, " "
PA—T. R. Ragland, " "
CE—T. R. Ragland, " "
MS—Van Johnson, " "
EM—H. M. Scott.....Beckley, W.Va.
SCO—West Va. Coal Mng. Co., Buyer T. Ragland, Skelton, W. Va.
S of H—1 Gasoline loco. and mules.
S of M—Hand.
PP—Purchase power.
EMP—40.

WESTERN MARYLAND COAL CO.
Kittanning Nos. 1 and 2 Mines.
PO—Blaine, W. Va.; CTY—Mineral.
No report.

WEST VIRGINIA COLLIERY CO.
No. 1, 3, 4 Mines; Drift; Kanawha and Gas, Acme splint Seams, 66 to 84 in. thick.
PO—Wevaco, W Va. CTY—Kanawha. RR—C. & O.
PR—I. R. Thomas, Charleston, W. Va.
TR—C. A. Cabell, .. Carbon, W. Va.
GM—C. A. Cabell, " "
PA—G. K. Cabell, Wevaco, W. Va.
SM—G. K. Cabell, " " "
MM—J. C. L. Harris, " " "
EE—T. A. McGary, " " "
MS—K. D. Quarrier, " " "
S of H—8 Elec. loco.
S of M—9 Elec. mach.
EMP—425. Last fiscal year output, 507,000 tons.

WEST VIRGINIA-PITTSBURGH COAL CO.
General Office, House Bldg., Pittsburgh, Pa.
PR—L. W. Dalzell, Commonwealth Trust Bldg., Pittsburgh, Pa.
TR—J. Dalzell McKee, Commonwealth Trust Bldg., Pittsburgh, Pa.
GM—Hebron Robison, 710 House Bldg., Pittsburgh, Pa.
PA—Hebron Robison, 710 House Bldg., Pittsburgh, Pa.
GS—W. D. McCausland, 710 House Bldg., Pittsburgh, Pa.
CE—W. H. Bradford, Empire Bldg., Pittsburgh, Pa.
EM—N. J. Wyeth.....Colliers W. Va.
Sales Agent, Hebron Robison, 701 House Building, Pittsburgh, Pa.

Colliers No. 1 Mine; Drift; Pgh. Seam, 4 ft. 8 in. to 5½ ft.
PO—Colliers, W. Va. SP—Same. CTY—Brooke. RR—P. C. C. & St. L.
MS—R. J Virgin.....Colliers, W.Va.
S of H—3 Elec. loco. Track gauge 42 inches.
S of M—9 Elec. machines.
PP—2 Erie and 2 Titusville return tubular boilers, total 600 H. P. 2 Gen. units 250 volts D. C. 5 pumps.
EMP—350. Last fiscal year output 184,000 tons.

Gilchrist No. 3 Drift, Pittsburgh Seam, 4ft. 8 in. to 5½ ft. thick.
PO—Wellsburg, W. Va. SP—Same. CTY—Brooke. RR—P.C.C.&St. L., P. N. & K. Branch.
MS—Jos. A. Smith, Wellsburg, W. Va.
S of H—Mules and 1 elec. loco. Track gauge 40 inches.
S of M—3 Elec. machines.
PP—2 Return tubular boilers, total 200 H. P. 1 Gen. unit 250 volts D. C., 4 pumps.
EMP—150. Last fiscal year output 48,500 tons.

La Belle No. 4, Drift, Pittsburgh Seam, 4 ft. 8 in. thick.
PO—Wellsburg, W. Va. SP—Same CTY—Brooke. RR—P.C.C. & St. L., P. N. & K. Branch.
MS—Sam'l. M. McMahon, Wellsburg, W. Va.
S of H—2 Elec. loco. Track gauge 42 in.
S of M—6 Elec. machines.
PP—Purchase power, 3 pumps.
EMP—250. Last fiscal year output 98,570 tons.

WEST VIRGINIA POCAHONTAS COAL CO.
PR—Wm. Leckie.....Welch, W.Va.
GM—Wm. Leckie, " "
CE—J. H. Williams, " "
EM—J. H. Williams, " "
TR—A. G. Edwards..New York, N. Y.
GS—Wm. Smith.....Leckie, W.Va.
PA—Wm. Smith, " "
MM—Kenneth Brewer....Leckie, W.Va.
EE—Kenneh Brewer, " "
SCO—West Virginia Pocahontas Coal Co., Buyer, W. S. Morris, Leckie, W.Va.
Sales Agency West Virginia Pocahontas Coal Sales Corp., Norfolk, Va.

Leckie No. 1 Mine; Drift; Pocahontas No. 3 Seam; 90 to 108 in. thick.
PO—Leckie, W. Va.; SP—Same; CTY—McDowell; RR—N. & W.
MS—G. R. Greer.....Leckie, W. Va.
S of H—1 Elec. loco. and mules.
S of M—1 Elec. mach.
PP—2 Gen. units, 250 volts, D. C. power purchased.
EMP—85. Last fiscal year output 142,300 tons.

Leckie No. 2 Mine; Drift; Pocahontas No. 3 Seam; 90 o 108 in. thick.
PO—Leckie, W. Va.; SP—Same; CTY—McDonald; RR—N. & W.
MS—Robert Smith,....Leckie, W. Va.
S of H—1 Elec. loco. and mules; track gauge 36 in.
S of M—1 Elec. mach.
PP—Gen. units, 250 volts D. C., power purchased.
EMP—75. Last fiscal year output 119,700 tons.

WEST VIRGINIA PULP & PAPER CO.
Hopkins No. 1 Mine, Drift, Sewell Seam, 5 ft. thick.
PO—Cass, W. Va. CTY—Randolph. RR—C. & O.
GS—E. P. Shaffer .....Cass, W. Va.
EMP—17.

WEYANOKE COAL & COKE CO.
Weyanoke and Elihu Mines, Drifts, Pocahontas No. 3 Seam.
PO—Lowe, W. Va. SP—Weyanoke, W. Va. CTY—Mercer. RR—Virginian Ry., Widemouth Branch, N. & W.
PR—S. J. Patterson, ... Dayton, O.
TR—H. J. Dreese, " "
GM—R. D Patterson, .. Lowe, W. Va.
GS—J. T. Morris, " "
PA—J. T. Morris, " "
EM—J. T. Morris, " "
MM—L. Cochran, " "
EE—L. T. Williams....Lowe, W.Va.
SM—C. W. Murphy, " "
S of H—Mules and 7 elec. loco. Track gauge 52 inches.
S of M—Pick and 4 elec. machines.
PP—3 Brownell water tube boilers, total 450 H. P. 3 Gen. units, 250 volts D. C.
EMP—250. Last fiscal year output 158,000 tons. Sales Agency, S. J. Patterson Co., Dayton, Ohio.

WHEELING STEEL & IRON CO.
Benwood Mine; Drift; Pittsbuogh No. 8 Seam; 78 in. thick.
PO—Wheeling, W. Va.; SP—Benwood, W. Va.; CTY—Ohio; RR—P. C. C. & St. L., B. & O.
PR—Isaac M. Scott....Wheeling, W.Va.
TR—F. W. Henderson, " "
Secy—C. J. Hunter, " "
GS—E. G. Rust, " "
PA—E. D. Adams, " "
EE—C. E. Bedell, " "
S of H—4 Elec. loco.; track gauge 42 in.
S of M—6 Elec. mach.
PP—Gen. units, 250 volts, D. C. Purchase power.
EMP—150.

WHITE STAR MINING CO
General Office, Dayton, O.
Alma Mine; Drift, Alma, Thacker, White Star Seam, 48 to 50 in. thick.
PO—Merrimac, W. Va.; SP—Same, (Prepay); CTY—Mingo; RR—N. & W.
PR—S. J. Patterson.....Dayton, O.
TR—H. J. Dreese, " "
GM—R. D. Patterson.....Lowe, W.Va.
PA—G. W. Welch.....Merrimac, W.Va.
MS—G. W. Welch, " "
EE—S. J. Short, " "
EM—D. M. Good....Williamson, W.Va.
S of H—Elec. loco. and mules.
S of M—3 Elec. mach.
PP—2 Return tubular boilers, total 200 H. P., 2 gen. units 250 volts D. C.
EMP—150.
Sales Agency, The S. J. Patterson Co., Dayton, O.

WHITAKER-GLESSNER CO.
General Office, Wheeling, W. Va. 1 mine in West Virginia, 1 mine in Ohio.
Carter Mine, Drift, Pittsburgh No. 8 Seam, 5 ft. thick.
PO—Wheeling, W. Va. CTY — Ohio.
PR—Alex. Glass, .. Wheeling, W. Va.
TR—G. W. Hocking, " "
GM—N. P. Whitaker, " " "
GS—W. H. Kasley, (of mines) " " "
PA—W. H. Kasley, (of mines) " " "
CE—F. E. Fieger, " " "
MM—J. E. Montgomery, " "
EE—Thos. Swayne, " " "
S of H—1 Elec. loco. Track gauge 34 inches.
S of M—2 Elec. machines.
PP—Power furnished from our Mill plant.
EMP—50. Last fiscal year output, 52,000 tons.

WHITE, E. E., COAL CO.
General Office, Glen White, W. Va.
TR—P. A. Vought, Mount Carmel, Pa.
PR—E. E. White, Glen White, W. Va.
GM—E. E. White, " " " "
GS—E. E. White, " " " "
PA—E. E. White, " " " "
EM—Robt. F. Roth, " " " "
MM—Wm. White, " " " "
EE—C. R. Stahl Stotesbury, W. Va.
Sales agency, Castner, Curran & Bullitt, Philtdelphia, Pa.

Glen White Mine, shaft; Beckley Seam, 4 to 7 ft. thick.
PO—Glen White, W. Va. SP—Same and Lester, W. Va. CTY —Raleigh. RR C. & O., Piney Branch, Virginian.
MS—F. J. McHugh, Glen White, W. Va.
SM—C. L. Pauley, " " " "
S of H—11 Elec. loco. Track gauge 44 in.
S of M—8 Elec. mach. and hand.
PP—6 Water tube boilers, total 2100 H. P., 2 gen. units, 6,600 volts A. C., 3 phase, 25 cycles, 1 pump.
EMP—350. Last fiscal year output, 349,000 tons.

Stotesbury Mine, Drift, Beckley Seam, 4 to 7 ft. thick.
PO—Stotesbury, W. Va. SP—Same. CTY—Raleigh. RR — C. & O., Piney Creek Branch.
MS—C. R. Stahl, Stotesbury, W. Va.
SM—J. K. Hedges, " " "
S of H—12 Elec. loco.; track gauge 44 in.
S of M—11 Elec. mach . and hand.
PP—Power furnished from Glen White Mine, 1 pump delivering water to surface.
EMP—250. Last fiscal year output 288,965 tons.

WHYEL COAL CO.
General Office, Uniontown, Pa.
Kilarm Mine; Drift; Pittsburgh Seam 84 to 96 in. thick.
PO—Monongah, W.Va.; SP—Kilarm W.Va.; CTY—Marion; RR—B. & O., Kilarm Br.
PR—Harry Whyel, Uniontown Pa
TR—George Whyel, " "
MS—H. C. Drum, Monongah, W.Va
EM—West Virginia Engineering Co. Fairmont, W.Va.
S of H—1 Elec. loco. and mules; track gauge 42 in
S of M—3 Elec. mach.
PP—1 Return tubular boiler, total 150 H.P., gen. unit 250 volts A.C 1 pump
Note—Idle June 25.

WILLIAMS COAL CO.
General Office, Charleston, W. Va.
Williams Mine, Drift, Kanawha No. 5 Seam.
PO—Sanderson, W. Va. SP—Morris, W. Va. CTY—Kanawha. RR—K. & W. Va.
Receiver, C. E. Fultz, Charleston, WVa.
SM—H. L. Kenney, Sanderson, W. Va.
S of H—Elec. loco.
S of M—Elec. mach.
EMP—50. Mine not in operation.

WILLIAMSON COAL & COKE CO.
Williamson No. 3 Mine; Drift, Winifrede Seam.
PO—Williamson, W. Va. SP—Same. CTY—Mingo. RR—N. & W.
GM—E. L. Bailey, Williamson, W. Va.
PA—E. L. Bailey, " " "
EM—D. M. Good, War Eagle, " "
MS—H. H. Kelly, Williamson, W. Va
SM—Thos. Thompson, " " "
S of H—Elec. loco.
S of M—Elec. and comp. air mach.
PP—4 Boilers, total 500 H. P. 1 gen. unit, 250 volts D. C.
EMP—250.

WILLIS BRANCH COAL CO.
No. 1 Mine; Drift, Long Branh Seam, 72 to 84 in. thick.
PO—Herberton, W. Va.; SP—Same (Prepay); CTY—Fayette; RR—Virginian.
PR—T. K. Laing....Herberton, W.Va.
GM—T. K. Laing, " "
GS—A. J. O'Neal, " "
MS—Joseph Mulligan, " "
SCO—J. S. Davis & Co., " "
CE—Clark & Krebs..Charleston, W.Va.
S of H—1 Gasoline loco. nad mules gravity.
S of M—Hand.
PP—1 Engine.
EMP—100.
Began shipping coal March 1, capacity 12,000 tons per month.
Sales Agency, Spring Coal Co., Boston, Mass.

WILLS, JOHN
General Office, Penna. Bldg., Philadelphia, Pa. 1 mine in W. Virginia and 3 mines in Penna.
Wills No. 4 Mine, Slope and drift, Up Freeport and Kittanning Seam, 3 to 5 ft. thick.
PO—Corinth, W. Va. SP—Same. CTY Preston; RR—B. & O.
GM—John Wills, Philadelphia, Pa
PA—M. C. Kelly,.. Corinth, W. Va.
MS—M. C. Kelly, " " "
S of H—Mules and rope. Track gauge 4 ft.
S of M—Hand.

WILSON, H. T. COAL CO.
General Office, 1118 Majestic building, Detroit, Mich.
Wilson Mine, Drift, Eagle Seam, 5½ ft. thick.
PO—Logan, W. Va., SP—Same, CTY—Logan. RR—C. & O.
PR—H. T. Wilson.....Detroit, Mich.
VP—A. B. Moore.....Detroit, Mich.
TR—W. H. H. Dorney, " "
GM—H. T. Wilson, " "
GS—Thomas Wilson ....Logan, W.Va.
PA—Thomas Wilson, " "
MS—B. B. Wilson, " "
EM—J. McCorkle, " "
MM—R. B. Brockell, " "
EE—R. B. Brockell, " "
SCO—H. T. Wilson Supply Co., Buyer, H. H. Oakley, " "
S of H—5 elec. loco. Track gauge 44 in
S of M—5 Elec. machines.
PP—2 Boilers, total 300 H. P., 250 volts, D. C.
EMP—120. Last fiscal year output, 108,000 tons.
Sales Agency, Norfolk & Ches. Coal Co.

WINCHESTER COAL CO.
Winchester Mine, Drift, Pgh., Seam, 5 to 8 ft. thick.
PO—Enterprise, W. Va.; SP—Same; CTY—Harrison RR—B. & O.
PR—Jas. Laulis.....Enterprise, W.Va.
GS—J. W. Duckworth, " "
SM—F. A. Martin, " "
TR—Thomas H. Laulis, " "
EM—Hornor Bros.....Clarksburg, W.Va.
S of H—Mules, track gauge 44 in.
S of M—2 Elec. mach.
PP—1 Fan and 1 pump, power purchased
EMP—35. Last fiscal year output 48,000 tons.
Sales Agent, Thomas H. Laulis, Enterprise, W. Va.

WINDING GULF COLLIERY CO
PR—Justus Collins, Cincinnati, O.
Secy—Geo. P. Daniels, " "
VP—J. A. Rinehan....New York, N. Y.
TR—Geo. Wolfe....Winding Gulf, W.Va.
GM—Geo. Wolfe, " "
GS—F. M. Cook, " "
PA—Address the Company," "
SCO—Winding Gulf Colliery Co., Winding Gulf, W. Va.
Sales Agency Smokeless Fuel Co., Cincinnati, Ohio.

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Nos. 1 and 3 Mines; Slope; Beckley Seam; 48 to 72 thick.
PO—Winding Gulf, W. Va.; SP—Same; CTY—Raleigh; RR—Virginian.
MS—Henry Reed, Winding Gulf, W.Va.
S of H—11 Elec. loco.; track gauge 44 in.
S of M—7 Elec. mach.
PP—2 S. Freeman & Sons water tube boilers, total 700 H. P., 2 gen. units, 250 volts D. C.; 1 pump.
EMP—275. Last fiscal year output 180,000 tons.

No. 2 Mine; Shaft; Beckley Seam; 48 to 72 in. thick.
PO—Winding Gulf, W. Va.; SP—Same; CTY—Raleigh; RR—C. & O.
MS—George Swim, Winding Gulf, W. Va.
S of H—4 Elec. loco.; track gauge 44 in.
S of M—3 Elec. mach.
PP—1 Pump. Purchase power.
EMP—225. Last fiscal year output 170,000 tons.

WINIFREDE COAL CO.
General Office, Winifrede, W. Va.
PR—J. J. Sullivan, Jr....Phila., Pa.
TR—Frank B. Stewart, Winifrede, W.Va.
GM—Frank B. Stewart, " "
GS—Frank D. Barron, " "
PA—J. G. O'Callaghan, " "
CE—R. P. Boykin, " "
EM—R. P. Boykin, " "
EE—J. L. Gleason, " "
SM—C. C. Provins..Winifrede, W. Va.
Sales Agents, Winifrede Coal Co., Frank B. Stewart, Cincinnati, O.

North, South and West Mines, Drifts, Winifrede Seam, 4 ft. 2 in. to 6 ft. 2 in. thick. Operate washery.
PO—Winifrede, W. Va., SP—Winifrede Jct., W. Va., CTY—Kanawha. RR—C. & O., Winifrede Br.
S of H—Mules and 6 elec. loco., track gauge 42 in.
S of M—Hand and 12 elec. machines.
PP—Purchase power.
EMP—500. Last fiscal year output, 172,000 tons.

Belmont Mine, Drift, Old Coalburg Seam, 4 ft. 8 in. to 6 ft. 6 in. thick.
PO—Crown Hill, W. Va.; SP—Paint Creek Jct., W. Va.; CTY—Kanawha; PR—C. & O.
MS—J. S. Miller....Crown Hill, W.Va.
SM—Geo. Hudnall, " " "
S of H—Mules and 2 elec. loco. Track gauge 42 inches.
S of M—Hand and 5 elec. machines.
PP—Purchase power.
EMP—88. Last fiscal year output 65,000 tons.

WINONA COAL & COKE CO.
Nos. 1 and 2 Mines.
PO—Grafton, W. Va. SP—Coffman, W. Va. CTY—Taylor.
MS—E. R. Short....Grafton, W.Va.

WOLF, ERTLE & ONDO.
Drift Mine; Pgh. Seam.
PO—Wellsburg, W.Va.; CTY—Brooke; RR—W. B. & Wash.
TR—Stephen Ertie, ..Wellsburg, W.Va.
S of H—Mules; track gauge 38 in.
S of M—1 Elec. mach.
EMP—10.
Sales Agent, Leopold Wolf, Wellsburg, W.Va.

WOOD PECK COAL CO.
Wood Peck Mine, Drift, Beckley Seam, 4 ft. to 5 ft. thick.
PO—Sullivan, W. Va. SP—Wood Peck, W. Va., CTY—Raleigh. RR—C. & O., Raleigh & S. W.
PR—W. W. Koiner....Sullivan, W.Va.
TR—Fred G. Wood, " "
GM—Fred G. Wood, " "
PA—Fred G. Wood, " "
EM—Fred G. Wood, " "
MS—R. L. Crews, " "
SM—Wm. McClanahan, " "
S of H—Mules and head and tail rope. Track gauge 42 inches.
S of M—Pick.
PP—1 Water tube boiler, 4 pumps.
EMP—40.
Sales Agents, West Virginia Coal Co., Richmond, Va.

WOOD-SULLIVAN COAL CO.
Drift Mine; Beckley Seam, 54 to 90 in. thick.
PO—Mullens, W.Va., (Temporary address), SP—Stone Coal, W.Va.; CTY—Wyoming; RR—Virginian.
PR—C. H. Mead.....Maben, W.Va.
TR—J. C. Sullivan...Mullens, W.Va.
GM—J. C. Sullivan, " "
PA—J. C. Sullivan, " "
EM—Philip Konrad, Kanawha Falls, W.Va.

WRIGHT COAL CO.
Wright Nos. 1 and 2 Mines, Drift, Fire Creek Seam.
PO—Wright, W. Va. SP—Same. CTY—Raleigh. RR—C. & O.
PR—W. S. Wood,....Charleston, W.Va.
GM—W. S. Wood, " "
MS—M. W. Murphy.....Wright, W.Va.
SM—O. S. Dixon, " "
S of H—Elec. loco.
S of M—Elec. mach.
PP—2 boilers, total 300 H. P., 250 volts D. C.
EMP—200.

WYATT COAL CO.
General Office, Charleston, W. Va.
PR—John Laing ....Charleston, W.Va.
TR—W. T. Green, " "
GM—John Laing....Charleston, W.Va.
PA—John Laing, " "
GS—Wm. Laing.....Sharon, W.Va.
CE—F. C. Cornett..Charleston, W.Va.
EM—F. C. Cornett, " "
MM—J. A. Walker, " "
EE—R. A. Cunningham, " "
SCO—Wyatt Coal Co., " "
SM—A. W. Laing.
Sales Mgr., E. F. Bardin, Charleston, W.Va.

Berlin Mine, Drift, No. 2 Gas Seam, 6 ft. thick.
PO—Laing, W. Va., SP—Berlin, W. Va., CTY—Kanawha. RR—C. & O., Cabin Creek, Branch.
MS—D. W. Williams..Charleston, W.Va.
S of H—Mules and 2 elec. loco., track gauge 44 in.
S of M—Pick and 6 elec. machines.
PP—1 Atlas water tube boiler, 150 H. P., 500 volts D. C.
EMP—90.

Horton North and Horton South Mines, Drifts, Coalburg Seam, 5 ft. 10 in. thick.
PO—Sharon, W. Va., SP—Same. CTY—Kanawha. RR—C. & O., Cabin Creek Branch.
S of H—Mules and 3 elec. loco., track gauge 44 in.
S of M—10 Elec. machines.
PP—Erie water tube boilers, total 300 H. P., 2 gen. units 500 volts D. C., 1 Pump
EMP—175.

Oakley Mine, Drift, Lewiston Seam, 4½ ft. thick.
PO—Giles, W. Va. PS—Same. CTY—Kanawha. RR—C. & O., Cabin Creek Branch.
S of H—Mules and 1 elec. loco., track gauge 44 in.
S of M—4 Elec. machines.
PP—Erie water tube boilers, total 300 H. P., 2 gen. units, 500 volts D. C., 1 pump.
EMP—75.

WYOMING COAL CO.
PO—Wyco, W. Va.; SP—Same; CTY—Wyoming; RR—Virginian.
PR—W. P. Tams, Jr.....Tams, W.Va.
VP—J. W. Wilson.....Wyco, W.Va.
Secy—J. O. Watts.....Lynchburg, Va.
TR—J. O. Watts, " "

YUMA COAL & COKE CO., THE
Yuma Mine; Drift; Island Creek Seam; 76 in. thick.
PO—Wilkinson, W. Va.; SP—Logan, W. Va.; CTY—Logan; RR—C. & O., Guyan Valley Br.
PR—A. D. Robertson....Shamokin, Pa.
TR—C. K. Robertson, " "
GM—Thos. F. Downing, Wilkinson, W.Va.
Asst Mgr—A. A. Hamilton, Jr., Wilkinson, W. Va.
PA—A. A. Hamilton, Jr,. Wilkinson, W.Va.
MM—E. M. Stephens, " "
EE—D. C. Kirk, " "
SM—U. S. Kayser, " "
MF—W. L. Stephens, " "
EM—W. C. McCall.....Logan, W.Va.
CE—The W. G. Wilkins Co.. Pittsburgh, Pa.
S of H—5 Elec. loco.; track gauge, 48 in
S of M—5 Elec. mach.
PP—2 Water tube boilers, total 400 H. P., 2 gen. units, 250 volts D. C.
EMP—125. Last fiscal year output 138,231 tons.
Sales Agency, Jewett, Big low & Brooks, Detroit, Mich., and Clear Creek Coal Co., Huntington, W. Va.

YUKON POCAHONTAS COAL CO.
Yukon Mine, Drift, War Creek Seam, 5½ ft. thick.
PO—Yukon, W. Va. CTY—McDowell. RR—N. & W., Dry Fork Branch.
MS—H. M. Myers....Yukon, W. Va.
S of H—Elec. loco.
S of M—Hand.
State report.

ZENITH COAL & COKE CO.
No. 1 and 2 Mines, Drifts, No. 3 Pocahontas Seam, 4 ft. 6 in. to 5 ft. thick.
PO—Crumpler, W. Va., SP—Same, CTY—McDowell. RR—Norfolk & Western, North Fork Branch.
PR—Worth Kilpatrick, Connellsville, Pa.
TR—J. A. Armstrong, " "
GM—A. D. Rice.....Crumpler, W.Va.
PA—A. D. Rice, " "
MS—H. H. Honaker, " "
CE—E. L. Bailey, " "
EM—F. L. Bailey..Crumpler, W.Va.
EE—W. O. Lambert, " "
SCO—Zenith Commissary Buyer, R. A. Tosh, " "
S of H—Mules and 6 elec. loco., track gauge 56½ in.
S of M—Hand and 5 Elec. mach.
PP—Power purchased. 440 volts A. C.
EMP—200. Last fiscal year output 137,649 tons.
Sales agency, Castner, Curran & Bullitt Co., Philadelphia, Pa.

WYOMING

For List of Abbreviations See Page 498.

ACME COAL CO.
No. 3 Mine, Drift, Monarch Seam, 18 ft. thick.
PO—Acme, Wyo. SP—Alger, Wyo. CTY—Sheridan. RR—C. B. & Q.
PR—A. K. Craig.....Acme, Wyo.
MS—A. K. Craig, " "
PA—A. K. Craig, " "
TR—Ora Darnall, " "
GM—Ora Darnall, " "
MM—Geo. Worth, " "
EE—Geo. Worth. " "
SCO—Acme Trading Co. Buyer, H. H. Sniveley, Acme, Wyo.
S of H—2 elec. loco. Track gauge 42 in.
S of M—9 elec. mach.
PP—3 Hiene boilers, total 333 H. P., 2 gen. units, 2,200 volts A. C., 3 phases, 60 cycles, 5 pumps, power also purchased.
EMP—200. Last fiscal year output 210,000 tons.
Sales agent, Ora Darnall, Acme, Wyo.

BEAR RIVER COAL CO.
Bear River Mine No. 1, Slope, Sub. Bituminous Seam, 216 to 288 in. thick.
PO—Evanston, Wyo.; SP—Samel CTY—Uinta; RR—Union Pacific.
PR—Geo. E. Pexton..Evanston, Wyo.
TR—O. H. Shoup, Colo. Springs, Colo.
GM—J. H. Martin.....Evanston, Wyo.
PA—J. H. Martin, " "
MS—J. H. Martin, " "
EM—O. E. Bradury, " "
MM—Hans Schouwalt....Evanston, Wyo.
S of H—Mules and Comp. air loco. Track gauge 36 in.
S of M—Hand and 6 comp. air. mach.
PP—3 return tubular boilers, total 375. H. P., 2 air comp. and 2 pumps.
EMP—Av. yearly 25. Last fiscal year
EMP—27. Last fiscal year output 38,293 tons.

BIG HORN COLLIERIES CO.
General Office, Denver, Colo.
Big Horn Mine; Slope, Seam 72 to 144 in. thick.
PO—Crosby, Wyo.; SP—Kirby, Wyo.; CTY—Hot Spring; RR— C. B. & Q.
PR—Jas. R. Thrope....Denver, Colo.
TR—M. C. Moyers, " "
VP—Herbert Addison, " "
PA—Herbert Addison, " "
GS—Frank Anderson, Jr..Crosby, Wyo.
MM—R. E. Fleming, " "
SCO—Big Horn Trading Co., " "
S of H—2 Elec. loco. and rope track gauge 36 in.
S of M—6 Elec., 2 comp. air mach.
PP—5 Reurn tubular boilers, total 750 H. P., 2 gen. units 2200 volts A. C., 3 phase, 50 cycles; 2 compressors, 1 pump.
Last fiscal year output 137,000 tons.

BITTER CREEK COAL MINING CO.
General Office, Equiable Bldg., Denver, Colo.
Drift Mine; Seam 96 in. thick.
PO—Point Of Rocks, Wyo.; SP—Same; CTY—Sweetwater.
PR—H. L. Littell.....Denver, Colo.
GM—H. L. Littell, " "
TR—W. F. Littell, " "
GS—I. A. Littell....Cannon City, Colo.
MS—F. Krovotin, Point Of Rocks, Wyo.
S of H—Mules, rope and gravity; track gauge 36 in.
S of M—Hand.
New operation.

CAMBRIA FUEL COMPANY (THE)
Cambria Mines, Nos. 3 and 4 Antelope, Drift; Semi Bituminous (Coking) Seam, 3 to 20 ft. thick.
PO—Cambria, Wyo.; SP—Same; CTY—Weston. RR—C. B. & Q.
PR—B. F. Overholt....Scottdale, Pa.
VP—Lewis T. Wolle.....Akron, Ohio
TR—Walter Schoonmaker..Cambria, Wyo.
Secy—Walter Schoonmaker, " "
MS—Chas. V. Westover, " "
SM—Pierre Sanders, " "
SCO—Cambria Commercial Co., Cambria, Wyo.
S of H—Horses, hoists, haulage rope and 8 comp. air locos.; track gauge 42 in.
S of M—20 comp. air mach.
PP—4 Water tube and 1 return tubular boiler, total 1925 H. P., 1,750 K. W. mixed turbine, 2300 volts, A. C., 3 phases, 60 cycles, 3 high pressure, 4 low pressure air comp.; 5 pumps.
EMP—418. Last fiscal year output, 349,975 tons.
Sales Agent, Walter Schoonmaker, Cambria, Wyo.

CARNEY COAL COMPANY.
Carney Mine, Drift, Carney Seam, 16 to 18 ft. thick.
PO—Carneyvile Wyo.; SP—Alger, Wyo., CTY—Sheridan; RR—C. B. & Q., Main Line.
PR—W. J. Carney.....Chicago, Ill.
TR—Quinton Johnsone, Jr., Chicago, Ill.
GM—C. B. Seymour....Carneyville, Wyo.
PA—C. B. Seymour, " "
GS—R. E. Gildray, " "
EM—R. E. Gildray, " "
MS—Walter Upton, " "
MM—R. A. Montgomery, " "
EE—J. Holiday, " "
SCO—Carney Trading Co., Buyer H.W. Newton, Carneyville, Wyo.
S of H—Mules and 8 elec. loco.; track gauge 42 in.
S of M—8 Elec. mach.
PP—4 Return tubular boilers, 2 Erie City, 2 Kewanee, total 600 H. P., 2 gen. units, 250 volts, D. C.; 3 pumps.
EMP—385. Last fiscal year output, 280,400 tons.
Sales Agent, C. B. Seymour, Carneyville, Wyo.

CENTRAL COAL & COKE CO.
General Office, Kansas City, Mo.
3 Mines in Wyoming, 3 in Missouri, 2 in Oklahoma, 7 in Arkansas, 9 in Kansas.
Nos. 1, 2 and 3 Mines; Slope; Rock Springs Seam.
PO—Rock Springs, Wyo.; SP—Same; CTY—Sweetwater; RR—U. Pac.
PR—Charles S. Keith..Kansas City, Mo.
VP—Harry N. Taylor, " "
PA—Thos. Mackie, " "
SM—Thos. Mackie, " "
MS—A. Vail.....Rock Springs, Wyo.
S of H—Elec. loco. and mules.
S of M—Elec. mach. and hand.
PP—10 Boilers.
EMP—416.

COLORADO-WYOMING COAL CO.
General Office, Denver, Colo.
PO—Medicine Box, Wyo.; CTY—Carbon.
PR—Abner Graves, Bank Bldg., Denver, Colo.
TR—F. F. Roose, Railway Exchange Bldg., Denver, Colo.

DIAMOND COAL & COKE CO.
General Office, Butte, Mont.
PR—John D. Ryan....New York, N.Y.
GM—F.W.C.Whyte...Anaconda, Mont.
PA—D. A. Welch.....Butte, Mont.
GS—Thos. Sneddon..Diamondville, Wyo.
EM—R. R. Vail, " "
MM—Joe Kaufman, " "
EE—John Platt, " "
SCO—Mountain Trading Co., buyer C.S. McDonald, Diamondville, Wyo.
Sales Agent, D. M. McAllister, Diamondville, Wyo.

Diamondville No. 1 Mine; Slope, Kemmerer Seam, 7 to 14 ft. thick.
PO—Diamondville, Wyo.; SP—Same; CTY—Lincoln, RR—O. S. L.
MS—Wm. Armstrong, Diamondville, Wyo.
S of H—Mules and rope; track gauge 3 ft
S of M—Hand and 5 Comp. air mach.
PP—11 Return tubular boilers, 1 gen. unit, 440 volts A. C., 3 phases, 1 comp., 2 pumps.

Continued on Next Page.

DIAMOND COAL & COKE CO.
State report.
EMP—170. Last fiscal year output 163,613 tons.

Oakley No. 2 Mine, Slope, Kemmerer Seam 7 to 14 ft. thick.
PO—Oakley Wyo.; SP—Diamondville; CTY—Lincoln, RR—O. S. L.
MS—Wm. Armstrong, Diamondville, Wyo.
S of H—Mules and rope; track gauge 3 ft
S of M—Hand and 3 Comp. air mach.
PP—8 Return tubular boilers, 1 Air comp., 1 pump.
EMP—120. Lost fisca lyear output, 150,168 tons.
Glencoe No. 4 Mine, Slope, Kemmerer Seam 7 to 14 ft. thick.
PO—Glencoe, Wyo.; SP—Same; CTY—Lincoln. RR—O. S. L.; Cumberland Br.
MS—Wm. Armstrong, Diamondville, Wyo.
S of H—Mules and rope; track gauge 3 ft
S of M—Hand and 10 Comp. air mach.
PP—7 Return tubular boilers, 1 compressor and 1 pump.
EMP—120. Last fiscal year output, 94,179 tons.

FAIRVIEW COAL CO.
General Mine; Slope; Sub-bituminous Seam, 60 to 78 in. thick.
PO—Glenrock, Wyo.; SP—Same; CTY—Converse; RR—C. & N.
PR—W. B. Sprague, Glenrock, Wyo.
GM—W. B. Sprague, " "
GS—W. B. Sprague, " "
TR—H. W. Sprague, " "
S of H—Rope.
S of M—2 Comp. air mach.
PP—1 Return tubular boiler, 150 H.P., 1 compressor, 2 pumps.
Successor to Glenrock Coal Co.

GLENROCK COAL CO.
Now Fairview Coal Co.

GUNN-QUEALEY COAL COMPANY.
Slope; "B" Seam, 6 ft. thick.
PO—Gunn, Wyo. SP—Rock Springs, WYO.; CTY—Sweetwater; RR—Union Pacific.
PR—P. J. Quealy....Kemmerer, Wyo.
GM—P. J. Quealey, " "
TR—Wm. E. Decker, 143 Liberty St., New York.
GS—Wm. Monay.....Kemmerer, Wyo.
PA—H. R. Groo.....Gunn, Wyo.
SM—Gilbert Morton, " "
MM—James Coles, " "
SCO—Desert Trading Co., Buyer, H. R. Groo, Gunn, Wyo.
S of H—Rope and mules.
S of M—Hand and 4 elec. mach.
PP—Boilers total 450 H. P., 2 gen. units, 250 volts, D. C.; 1 pump.
EMP—175. Last fiscal year output 159,918 tons.
Sales Agent, T. J. O'Brien, Salt Lake City, Utah.

KEMMERER COAL CO.
PR—M. S. Kemmerer..New York, N.Y.
TR—J. L. Kemmerer, " "
GM—P. J. Quealy....Kemmerer, Wyo
PA—P. J. Quealy, " "
Asst GM Wm Monay, " "
Asst. MS—C. S. Beach, " "
EM—C. S. Beach, " "
MM—John Lofgren.....Frontier, Wyo.
SCO—Frontier Supply Co., Buyer, R. M. Turner, Frontier, Wyo.
Sales Agent F. J. O'Brien, Salt Lake Ciy, Utah.

Nos. 1 and 3 Mines; Slope, Kemmerer Seam, 60 to 144 in. thick.
PO—Kemmerer, Wyo.; SP—Same; CTY—Lincoln; RR—O. S. L.
MF—Gomer Reese,.....Frontier, Wyo.
S of H—Mules.
S of M—Hand.
PP—4 Water tube, 2 return tubular boilers, total 900 H. P., 2 gen. units 2300 volts A. C., 3 phase, 60 cycles; power furnished from Frontier Supply Co., and used at all mines.
SCO—347. Last fiscal year output 171,000 tons.

No. 4 Mine; Slope; Willow Creek Seam; 60 to 69 in. thick.
PO—Kemmerer, Wyo.; SP—Same; CTY—Lincoln; RR—O. S. L., Willow Creek Br.
S of H—Mules.
S of M—Hand.
PP—2 Water tube boilers, total 300 H. P.
EMP—178. Last fiscal year output 127,000 tons.

No. 5 Mine; Slope; Willow Creek Seam 60 to 96 in. thick.
PO—Kemmerer, Wyo.; SP—Same; CTY—Lincoln; RR—O. S. L., Willow Creek Br.
MF—P. F. Patterson.....Sublet, Wyo.
S of H—4 Elec. loco. and mules; track gauge 42 in.
S of M—1 Comp. air.
PP—5 Water tube boilers, total 750 H. P.
EMP—262. Last fiscal year output 223,000 tons.

No. 6 Mine; Slope; Willow Creek Seam; 72 to 96 in .thick.
PO—Kemmerer, Wyo.; SP—Same; CTY—Lincoln; RR—O. S. L., Willow Creek Br.
S of H—Mules.
S of M—Hand.
PP—4 Water tube boiler, total 600 H. P.
EMP—153. Last fiscal year output 91,000 tons.
Note—Nos. 1, 4 and 6 idle at present, June 30 1915.

KOOI, PETER.
Kooi Mine, Slope, Monarch Seam, 22 ft. thick.
PO—Kooi, Wyo; SP—Same; CTY—Sheridan; RR—C. B. & Q.
PR—Peter Kooi.....Kooi, Wyo.
GM—Peter Kooi, " "
PA—Peter Kooi, " "
MS—R. F. Hotchkiss, " "
EM—Geo. Hotchkiss.....Kooi, Wyo.
SM—A. N. Waymack, " "
S of H—Rope, horses and 3 elec. loco.; track gauge 42 in.
S of M—4 Elec. and 1 comp. air mach.
PP—2 Erie return tubular boilers, total 300 H. P., 1 comp., 3 pumps. power also purchased.
EMP—225. Last fiscal year output 200,000 tons.
Sales Agencies, National Fuel Co., Billings, Great Falls and Butte, Mont., Carbon Coal & Supply Co., Omoha, Neb., C. L. Jones, Spokane, Wash.

LION COAL CO.
General Office, Ogden, Utah.
Lion Mine; Shaft and slope Nos. 1 and 3 Seams 72 to 96 in. thick.
PO—Rock Springs, Wyo.; SP—Same; CTY—Sweetwater; RR—U. P.
PR—Joseph Scowcroft.....Ogden, Utah
TR—John Watson, " "
GM—D. H. Pape, " "
PA—W. B. Mowbray, " "
GS—R. Y. Gibson....Rock Springs, Wyo.
EM—R. Y. Gibson, " "
MS—R. Y. Gibson, " "
MM—J. L. Libby, " "
EE—D. C. McKehan, " "
EMP—200.
SM—H. C. Marchant....Ogden, Utah.
S of H—Mules; track gauge 42 in.
S og M—4 Elec. mach.
PP—Power purchased; 2 pumps.

LOST SPRINGS COAL CO.
Out of business.

MODEL MINING COMPANY.
Model Mine, Shaft; Carney Seam; 16½ ft. thick.
PO—Carneyville, Wyo.; SP—Alger, Wyo.; CTY—Sheridan; RR—C. B. & Q., Lincoln & Billings Br.
PR—Frank W. Smith, Detroit, Mich.
TR—John Peters,.....Williamsport, Pa.
GM—Stewart Kennedy..Sheridan, Wyo.
PA—Stewart Kennedy, " "
MS—Geo. Gebo.....Carneyville, Wyo.
MM—Walter Wright, " "
EE—Walter Wright, " "
S of H—Horses; track gauge 42 in.
S of M—1 Elec. Sullivan Iron-Clad Machine.
PP—1 gen. unit, 2200 volts, A. C., 3 phases 60 cycles, 250 D. C.; 1 pump; power purchased.
EMP—29. Last fiscal year output 25,876 tons.

NEBRASKA COAL CO.
Nebraska Mine Slope; Upper Laramie Seam; 8 ft. 6 in. thick.
PO—Rawlins, Wyo. SP—Same. CTY—Carbon.
PR—J. J. Cullen.....Rawlins, Wyo.
TR—J. J. Culien.....Rollins, Wyo.
GM—H. Larsen, " "
MS—H. Larsen, " "
S of H—Mules and steam; track gauge 30 in.
S of M—Hand.
EMP—2 to 4. Last fiscal year output 1944 tons.

OWL CREEK COAL CO.
Owl Creek Mine; Slope; Gebo Seam, 12 ft. thick.
PO—Gebo, Wyo; SP—Kirby; CTY—Hot Springs; RR—C. B. & Q., Billings, Casper Br.
PR—R. J. Ireland...Amityville, N.Y.
TR—M. P. Myton, " "
GS—C. A. Barnard.....Gebo, Wyo.
PA—C. A. Barnard, " "
MM—James C. Rae, " "
MF—J. R. Kirby, " "
EE—James C. Rae, " "
SCO—Owl Creek Mercantile Co. Buyer, C. A. Barnard, Gebo, Wyo.
S of H—Mules, 2 Elec. loco. and rope; track gauge 42 in.
S of M—10 Elec. and 13 comp air mach.
PP—7 Erie City Iron Works return tubuler boiler, total 950 H. P. gen. units, 250 volts D. C., 2 air comp., 1 pump.
EMP—200. Last fiscal year output, 177,611 tons.

ROCK SPRINGS-GIBRALTAR COAL MNG. CO.
No. 3 Mine, Drift, Seam 6 ft. thick.
PO—Black Buttes, Wyo.; SP—Same; CTY—Sweetwater; RR—U. P.
PR—Gus Sturholm..Rock Springs, Wyo.
TR—Phillip Sturholm, " "
GM—Moses E. Harvey, Black Buttes, Wyo
MS—Moses E. Harvey, " "
PA—S. H. Harvey, " "
SM—S. H. Harvey, " "
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—1 Water tube boiler, 1 pump.
EMP—12. Last fiscal year output 5030 tons.
Sales Agent, I. M. Cox.

ROCKY MTN COAL & IRON CO.
General Office, Crocker Bldg., San Francisco, Cal.
Mine Nos. 6 and 8, Slope; Seam 10 to 18 ft. thick.
PO—Evaston, Wyo. SP—Same. CTY—Uinta; RR—Union Pacific.
VP—W. H. Crocker..San Francisco, Cal.
S of H—Mules; track gauge 3 ft.
S of M—Hand.
PP—4 Return tubular boilers, total 270 H. P.
Not operating at present.

ROSIN COAL CO.
Rosin Mine, Drift, Sub. Bituminous Seam 5½ ft. thick.
PO—Lost Spring, Wyo. SP—Same. CTY—Converse; RR—C. & N. W., and W. N.
PR—P. E. McKillys..Lost Spring, Wyo.
TR—D. B. McMahon, " "
GM—F. G. Kloke, " "
PA—F. G. Kloke, " "
S of H—Elec. locos.; track gauge 36 in.
S of M—1 Elec. mach.
PP—Boilers. total 150 H. P., 1 gen. unit. 220 volts D. C.
EMP—50.

SHERIDAN COAL CO. (THE)
General Office, Omaha, Neb.
Sheridan Mine Nos. 4 and 7; Slope; Sheridan No. 2 Seam; 48 to 156 in. thick.
PO—Dietz, Wyo.; SP—Same; CTY—Sheridan; RR—C. B. & Q.
PR—G. W. Megeath....Omaha, Neb.
TR—A. P. Whitmore, " "
GM—H. S. Honka.....Dietz, Wyo.
SM—H. S. Honka, " "
MS—L. J. Cake, " "
EM—L. J. Cake, " "
MM—Geo. Dorris, " "
EE—Geo. Dorris, " "
SCO—Dietz Trading Co., " "
S of H—8 Elec. locos. and mules; track gauge 42 in.
S of M—Hand and 9 comp. air mach.
PP—3 Return tubular boilers, total 450 H. P., 1 gen. unit. 250 volts D. C., 2 pumps, 1 air comp.; buy power and have an M. G. set.
EMP—220. Last fiscal year output, 170,000 tons.
Sales Agent, F. Richardson, G. S. A., Omaha, Neb.

SUPERIOR COAL CO.
General Office, Cheyenne, Wyo.
A, B, C, D, and E Mines; Slope; Nos. 1, 7 and 3, Vandyke Seams.
PO—Superior, Wyo.; SP—Same; CTY—Sweetwater; RR—U. P.
GM—F. A. Manley.....Omaha, Neb.
PA—W. K. Lee.....Cheyenne, Wyo.
GM Asst—W. D. Brennan, " "
EM—W. L. Cowdrey,..Superior, Wyo.
SM—E. B. Treat....Cheyenne, Wyo.
MM—R. Muir....Rock Springs, Wyo.
EE—B. L. Betcher, " "
MS—Frank S. Davis....Superior, Wyo.
SM—H. Harris, " "
S of H—Rope, elec., and gaso. locos. and mules.
S of M—Hand and elec.
PP—10 Boilers, 2500 H. P., gen. units, 2300 volts A. C.
EMP—1500.

UNION PACIFIC COAL CO.
General Office, Cheyenne, Wyo.
GM—F. A. Manley....Omaha, Nebr.
GM Asst—W. D. Brennan, Cheyenne, Wyo
PA—W. K. Lee, " "
MM—Robert Muir..Rock Springs, Wyo.
EE—B. L. Betcher, " "
SM—E. B. Treat.....Cheyenne, Wyo.

Rock Springs Nos. 4, 7, 8, 10, Hanna Nos. 2, 3, 3½ 4, Reliance Nos. 1, 3 and 4 Mines; Shafts, Slopes and Drifts; Rock Springs and Hanna Seams, Hanna 8 to 35 ft. thick, R. S. 4½ to 11 ft. thick.
PO—(R. S.) Rock Springs, Wyo., (H) Hanna, Wyo., (R) Reliance, Wyo.; SP—Same; CTY—(R.S.—H) Carbon (R) Sweetwater. RR—U.P.
MS—(R.S.) D.S.Thomas, Rock Springs, Wyo. (H) W.M.Hartman, Hanna, Wyo. (R) F.L.McCarty, Reliance, Wyo.
S of H—21 Elec., 2 gasoline locos., mules and rope and gravity; track gauge (R.S.) 30 in. (H) 42 in.
S of M—34 Elec. 26 comp. air mach. and hand.
PP—25. Water tube, 9 return tubular boilers. 5000 H. P., 8 gen. units 2300 volts A. C., 3 phase, 60 cycles, 500 and 250 volts D. C., 4 comp. and 12 pumps.
EMP—2553. Last fiscal year output, 1,780,490 tons.

Cumberland Nos. 1 and 2, Slope, Kemmerer Seam, 6 to 18 ft. thick.
PO—Cumberland, Wyo.; SP—Same; CTY—Lincoln; RR—O. S. L.
MS—J. M. Faddies..Cumberland, Wyo.
S of H—Rope; track gauge 42 in.
S of M—Hand.
PP—6 Water tube, 10 return tubular, boilers, total 4200 H. P., 2 gen. unit, 2300 A. C., 3 phase, 60 cycles; 2 pumps.
EMP—465. Last fiscal year output 417,508 tons.

U. S. COAL CO.
Conroy No. 1 Mine; Slope; Book Cliff-Adaville Seam.
PO—Kemmerer, Wyo.; SP—Same; CTY—Lincoln; RR—U. Pac.
PR—Elmer E. Thomas, National Bank Bldg., Omaha, Neb.
TR—E. M. Brickell....Pittsburgh, Pa.
GM—B. P. Manley, Kemmerer, Wyo.
PA—B. P. Manley, " "
MS—W. E. Powell, " "
EM—W. S. Vance, " "
MM—James Daugherty, " "
S of H—Rope and steam loco.
S of M—3 Elec. mach. and hand.
PP—3 Water tube boilers, total 450 H. P., gen. unit 250 volts D. C. 2 pumps.
EMP—125. Last fiscal year output, 100,000 tons.

WYOMING COAL CO.
General Office, Eccles Bldg., Ogden, Utah.
Star Mine; Shaft and Slope; 66 to 84 in. thick.
PO—Rock Springs, Wyo; SP—Same; CTY—Sweetwater; RR—U. P.
PR—Jos. Scowcroft, ...Ogden, Utah
TR—John Watson, " "
GM—D. H. Pape, " "
PA—W. B. Mowbray.....Ogden, Utah
GS—R. Y. Gibson, Rock Springs, Wyo.
EM—R. Y. Gibson..Rock Springs, Wyo.
MS—R. Y. Gibson, " "
MM—D.C.McKeehan, " " "
EE—D.C.McKeehan, " " "
S of H—Mules.
S of M—Hand
PP—5 Return tubular boilers, total 600 H.P., 2 pumps.
EMP—175. Last fiscal year output, 74,500 tons.

WYOMING COAL & COKE CO.
Now Wyoming Coal Co.

WYOMING COAL MINING COMPANY.
Monarch No. 1, Slope; "Monarch" Seam; 32 ft. thick.
PO—Monarch, Wyo.; SP—Alger, Wyo.; CTY—Sheridan; RR—C.B.& Q.
PR—Mrs. Emma Holbrook Little N.Y.
TR—A. W. Pollock....Monarch, Wyo.
GM—A. W. Pollock, " "
PA—A. W. Pollock, " "
MS—Geo. H. Wilkinson, " "
EM—Albert Griffith, " "
MM—O. L. Wirtman, " "
EE—O. L. Wirtman..Monarch, Wyo.
SCO—Monarch Trading Co., buyer E. F. Alexander, Monarch, Wyo.
S of H—Horses, rope and 5 elec. locos.; track gauge 42 in.
S of M—8 Elec. chain breast mach.
PP—5 pumps, power purchased.
EMP—300. Last fiscal year output 357,777 tons.
Sales Agent, A. W. Pollock, Monarch, Wyo.

HECKMAN
BINDERY INC.
JULY 95
Bound-To-Please N. MANCHESTER, INDIANA 46962

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